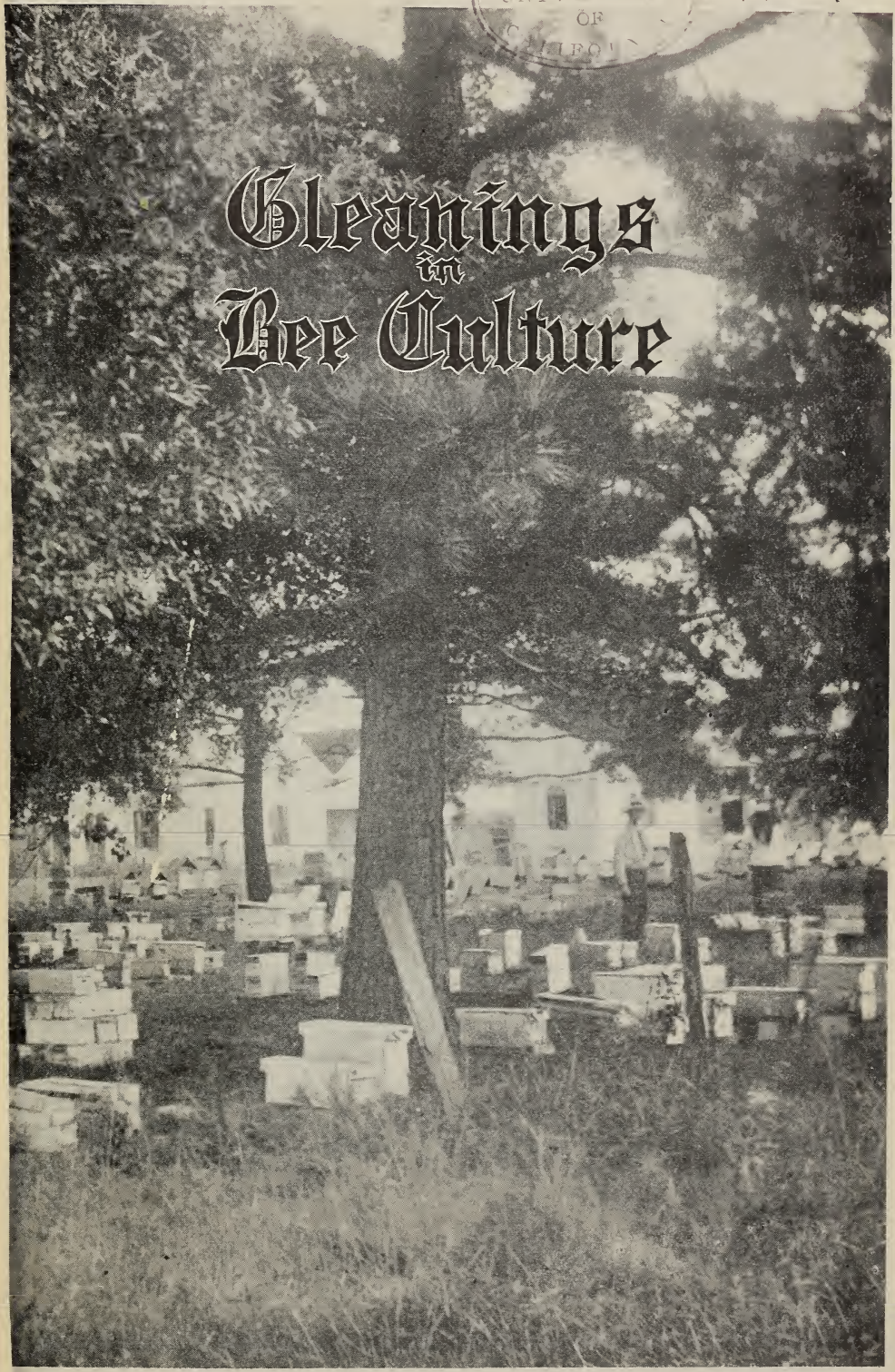
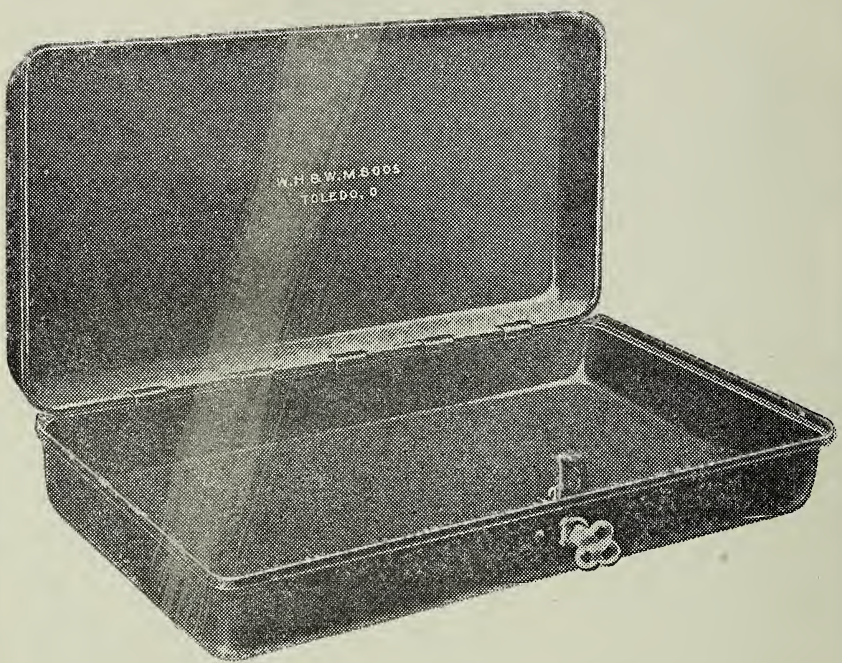
Gleanings in Bee Culture



Vol. XLIII DECEMBER 15, 1915 No. 24

Safety First Steel Document Box . . Valuable Paper Wallet



The steel DOCUMENT-BOX has a black ebony finish, is fire-resisting, has a double-hinged cover fitted with spring lock and two keys. It is eleven inches long, five and one quarter inches wide, and two and one half inches deep. As it is meddler-proof and curiosity-proof, it gives one an opportunity of filing away those valuable papers, letters, and keepsakes with which one does not care to have others become familiar.

The PAPER WALLET which fits into the DOCUMENT-BOX is not shown in the illustration. It has a strong, finely grained cover fitted with eight tough manilla-paper envelopes for documents, with printed forms for each and classified as follows: Notes and Mortgages, Last Will and Testament, Contracts, Deeds, Life Insurance Policies, Fire Insurance Policies, Clippings, and Memoranda.

Send us ONE NEW yearly subscription to GLEANINGS and TWO new six months' subscriptions, remitting in payment $1.50, and we will send as premium without additional cost one of these DOCUMENT BOXES and PAPER WALLET.

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Send us ONE NEW yearly subscription to GLEANINGS with remittance of $1.00 **plus postage on the PREMIUM** which weighs about two pounds, and we will send you the box and wallet as premium.

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Gleanings in Bee Culture . . . . Medina, Ohio

Gleanings in Bee Culture

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VOL. XLIII. DECEMBER 15, 1915 NO. 24

EDITORIALS

THE reader will be interested particularly in an article in this issue by B. Keep, about the man who built his fine house from cellar to gable himself with the money he made from his bees.

THE National Beekeepers' Association will hold its next convention in Chicago on Feb. 22, 23, 24. Fuller announcements will be given January 1. Chicago is a convention city, and the attendance at this meeting ought to be a record-breaker. Every one who can should make his plans to go.

MR. FRANCIS JAGER, of the State University of Minnesota, is sending out to the beekeepers and farmers of his state a circular letter on wintering bees. It is short, crisp, and at the same time orthodox in its teachings. It will do a great deal of good to a large class of farmer beekeepers who do not know the fundamental principles of good wintering.

WE take pleasure in referring to our index, which has been prepared with unusual care. The reader, in order to get the most out of his subscription price, should, with the index before him, go over his back numbers for the year, especially during the long winter evenings, as many an article that he was compelled to skip in the rush of the season he can read and digest.

An Alabama Queen-yard

A COCOANUT-TREE was the most prominent feature of our December first cover picture. This time it is a long-leaf pine, which shelters a portion of the queen-yard of W. D. Achord, Fitzpatrick, Ala., who writes the article entitled, "Building up a Business in Shipping Bees without Combs," which appears on page 1031 of this issue.

The cover illustration shows a portion of his 400 mating-boxes at the home yard, as they looked the latter part of September, this year. Mr. Achord's residence stands in the rear of the picture.

Wintering Experiments on a Large Scale

ATTENTION is drawn to an article on wintering, by J. J. Anderson, in this issue. Mr. Anderson is one of the extensive beekeepers of his state—a man of wide experience, and one well qualified to speak on almost any question relating to bee culture. He tried a series of experiments during the winter of 1914 that are interesting and valuable. Instead of trying out all these different ways of packing on a small scale he went at it in a large way, so the results are all the more conclusive.

We called on him last winter, and the photographs will help to show the different methods he used for wintering. The results go to show that the cellar came out a little ahead; and next in order in good wintering was the Holtermann winter case, leaving the other bees, packed in long rows, to come out third and fourth.

Testing out so many colonies with upper entrances we regarded as a bold experiment; and while the result is, perhaps, not surprising, it is worth something to know that practice bears out theory.

Catch the Eye of the Cook

THE editor of *The Mabel Record,* Mabel, Minn., has started something. He has begun to publish in his paper recipes from GLEANINGS for October 1, and will continue to print three or four of them in each issue until the close of the year. On January 1, 1916, the woman who reports on the largest number of recipes will be given a gallon of extracted honey.

Recipes of this nature are sure to prove interesting to readers. Here is an idea: Get the editor of your local paper to run a column or so of recipes in the same issue in which your advertisement appears. Live

matter of this kind not advertising any particular honey he ought to be willing to print free of charge, especially if you buy ten or twelve inches of advertising somewhere else in his paper.

The women will find the column irresistible. Your honey advertisement will pull harder than it ever pulled before. The beekeepers who market honey locally can not afford to neglect such opportunities as this.

Olive Oil and Honey as a Tonic

Our attention has been called to the following clipping from the Home Department of the *National Magazine* for August, last year. This happens to be a preparation that we have tried ourselves, and found pleasing to the taste. What a blessing it would be to humanity in general, and, incidentally, to beekeepers in particular, if all who take olive oil would take it with honey!

OLIVE OIL WITH HONEY.

Olive oil is one of the finest flesh-builders and nerve foods in the world, and I often wonder why parents do not give it to the children more than they do. Combined with honey, which is also valuable as a food and a blood purifier, it makes an ideal tonic, and the oil cannot be distinguished. Try a teaspoonful of each before meals or after, or with the meals; the amount may be increased if desired. In the absence of honey, any sweet fruit juice may be substituted, and makes a much more palatable combination than the acid juices, such as lemon, grape juice, etc., which are usually recommended as a disguise for the oil. Children, especially, prefer something sweet.

A New Bee-book, "Productive Beekeeping," by Frank C. Pellett

Scarcely had Dr. Phillips' book, "Beekeeping," issued from the press of the Macmillan Co. than the announcement came that there is still another new book just from the press of the J. B. Lippincott Co., Philadelphia, entitled "Productive Beekeeping," by Frank C. Pellett, State Apiarist and Foul-brood Inspector of Iowa. Mr. Pellett is not only a student of apiculture but also of natural-history subjects. The new volume contains 340 pages of original matter and 134 illustrations, mainly half-tone engravings from photographs taken by the author himself.

While we have not been permitted to see the completed volume, the publishers have kindly placed in our hand proofs of the pages up to 298. We have not read all this work page by page, but we have gone over it enough to know that it is safe and orthodox in its teachings. While the author believes that a few minor methods are original with him, the book is not presented for the purpose of exhibiting original material, but to describe the best methods gleaned from every possible source. In no sense can it be said to be a rehash of material from other works.

The book is well worth the price asked—$1.50. The same can be had from this office, or we will club it with Gleanings for $2.10 postpaid. Canadian postage 30 cents extra, and foreign postage 60 cents extra.

Self-spacing by Hive-rabbets Rather than by Projections on the Frames Themselves

The article by A. Butsch in this issue shows a method of spacing frames by means of notches in the hive-rabbets. While we don't like to throw cold water on the proposition, the public should know the facts. Our correspondent said he thought of patenting it, but we doubt if he could secure a valid patent in view of the patents that have been granted on the same principle. There are many modifications of it, and the principle has been tried out over and over again, only to be abandoned sooner or later. In our A B C and X Y Z of Bee Culture, under the head of "Frames, self-spacing," will be found a variety of self-spacing rabbets—see page 256 of the last edition.

The objection (and it is a serious one) is that, in moving bees out to outyards, the frames will hop out of their place when colonies are drawn over rough roads. Another serious objection is that the frames cannot be handled in groups of threes and fours like those having spacers on the frames. The very fact that the rabbet scheme of spacing is born again and again, and that it dies almost as soon as it is born, shows that it cannot hold its own with the scheme of having the spacing device on the frame itself.

Our correspondent speaks of the necessity of having a grindstone handy to sharpen the honey-knife when extracting from metal-spaced frames. We have extracted here at Medina a great many tons of honey from metal-spaced frames. We do not sharpen the knife except as it becomes dull after half a day's uncapping. We find no necessity at all for bumping against the metal projections.

A New Edition of "Fifty Years Among the Bees," Again

In 1885 Dr. C. C. Miller, of Marengo, Ill., got out a modest little volume entitled "A Year among the Bees." This, like the

subsequent editions, was as entrancing as a romance. When the edition was exhausted a larger and more pretentious volume was gotten out by the doctor, entitled "Forty Years among the Bees." This was in 1902. This again was exhausted in 1911, when the first edition of "Fifty Years among the Bees" appeared. This, like the previous volume, contained a good many original photographs and a general revision. Still again another "Fifty Years among the Bees" has come from the GLEANINGS press. "It's a dandy." It still bears the title of half a century, notwithstanding four years more have been added to the time. The last edition was not revised as extensively as the former editions, and this only goes to show how nearly Dr. Miller in the first edition of "Fifty Years" got down to rock bottom. But, nevertheless, here and there occur slight changes. The most important changes relate to his record-breaking honey crop in 1913, to his later experiences in fighting European foul brood, and to minor changes in methods here and there; otherwise the two editions of "Fifty Years" are very much the same.

In all there have been sold of Dr. Miller's books under the various titles, or will have been when the present edition is sold, something like 18,000 copies.

Dr. Miller, notwithstanding he is past 84, when most men would have passed to their reward, is still very much alive and very much of a beekeeper. By Dr. E. F. Phillips he is considered to be the best comb-honey producer in the United States if not in the world. At all events, Dr. Miller's methods have been utilized and copied all over the world. He has originated methods and processes in the matter of swarm control and in the production of comb honey that help make him "the grand old man" that he is in the bee-world today, revered and respected everywhere, not only for his beautiful spirit, but for what he has done.

Just in the matter of comb-honey production alone "Fifty Years among the Bees" is worth many times the price, $1.00; or clubbed with GLEANINGS for $1.50. Canadian postage 30 cents extra, and foreign postage 60 cents extra.

A Serious Situation in Florida

OUR readers will remember Wilmon Newell, formerly State Entomologist of Texas, who did such good work in bee-culture investigations and who for years was unremitting in his efforts to secure a foul-brood law in Texas. He finally succeeded, but failed to get the necessary appropriation to carry it into effect. Later on this was secured; but along about this time the powers that be in Florida began to look for a good man to handle a most alarming situation in their state. To make a long story short, Mr. Newell was called to and accepted the position of Plant Commissioner by the State Plant Board, Gainesville, Florida. The announcement of his acceptance was given in this journal for September 1st, page 696.

In his new position Mr. Newell has not been idle. He and his associates are doing all in their power to avert a situation more serious than foul brood—a situation that has already cost the state of Florida many thousands of dollars; and unless it can get more money to handle the problem it will be the ruination of the citrus groves of the whole state.

It appears that the disease known as the citrus canker was imported a couple of years ago into Florida from Japan. This disease is awfully virulent, makes rapid headway, and has now found its way into seventeen counties. The worst thing about it is that there is no cure except the complete extermination of the orchards, tree, root, and branch, by fire. The sprays that are effective for ordinary diseases are absolutely powerless.

Florida has already appropriated $125,000, and a like sum has been contributed by the Florida orange and grapefruit growers. The result has been that, so far, every infected tree or orchard has been burned. Mr. Newell and his associates say their funds are running low, and that the disease will break out again, because there are other trees and orchards that are probably diseased, but where the canker has not as yet shown itself. What are now most urgently needed are funds to provide adequate inspection work to catch the disease as soon as it breaks out.

Florida is appealing to the United States, which has already appropriated $35,000, $22,000 of which went to Florida, to hold the disease in check; but before the Florida legislature can meet again, there is urgent need that Uncle Sam reach down in his pockets and help not only Florida but other states like Alabama, Mississippi, Louisiana, and Texas, where the disease has already taken a foothold.

Our readers are urged to write to their Senators and Representatives, urging them to support any bill or appropriation that will tend to prevent the utter annihilation of the orange, grapefruit, and lemon business.

Perhaps this propositon may not interest beekeepers; but it should be remembered that beekeeping and citrus-growing go hand in hand. Orange honey is getting to be one of the commercial honeys that is very highly prized. While the amount is not large, it is sufficient to attract the attention of every beekeeper who would protect his industry —especially the industry of his fellow-beekeeper in states where the production of orange honey is possible.

In the mean time we congratulate the people of Florida on having so able a man for Plant Commissioner as Professor Newell. He is by training and general temperament eminently qualified to handle the situation.

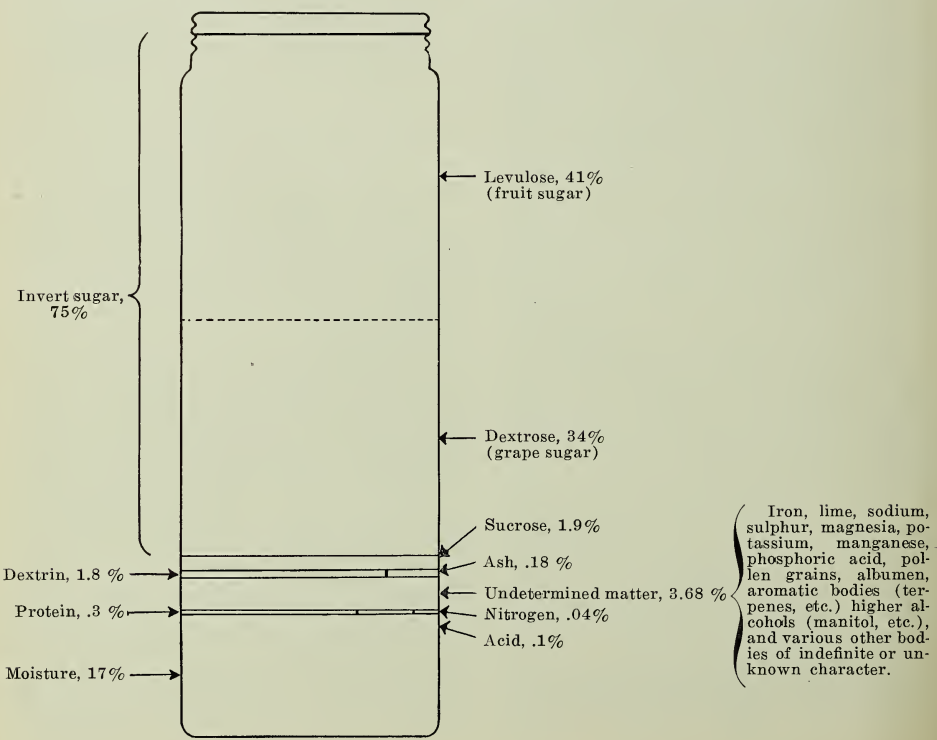
The Economy of Honey as a Food

CARBOHYDRATES, usually in the form of sugar or starch, are the elements of food important in furnishing energy. Since honey is richer in carbohydrates than in other food elements, it comes in the class of energy-producing foods. Honey contains very little protein, the muscle-forming element of food, and no fat. The ash and undetermined matter shares in forming bone and aids digestion.

The unit of comparison of foods is the calorie. This is, approximately, the amount of heat which would raise the temperature of 1 lb. of water 4° F. The energy value of honey is about 1485 calories per pound, which means that if *all* the heat potentiality in a pound of honey could be utilized it would raise the temperature of 33 lbs. of water from freezing to the boiling point.

Basing food value upon the amount of energy in calories to be derived from a food, and taking the average prices into consideration, honey is a more economical food than pears, oranges, figs, bananas, strawberries, and grapes, other foods in the the same class of energy-producers. Of foods in other classes, honey is more economical as an energy-producer than celery, tomatoes, canned corn, and all the meats, with the possible exception of pork chops. On the other hand, it is less economical than bread, cereals, potatoes, baked beans, sugar, and apple.

These comparisons were made from studies and tables from the U. S. Department of Agriculture and other sources. The diagram below illustrates graphically the constituents of an average jar of honey. The flavor of honey depends largely upon the presence and proportion of the elements bracketed as " undetermined matter."



Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.

JOHN L. BYARD uses candy and foundation in mating-boxes, p. 941. Swiss beekeepers use candied honey, without comb or foundation.

THE EUROPEAN war pinches where one would hardly expect it. *The British Bee Journal* has cut down its number of pages because the war has made it impossible to get enough paper!

EARL SEAMANS, I quite agree with you, p. 932, that European foul brood is not such a dreadful calamity, but I don't agree in thinking the queen must in all cases be killed. You caged a queen, gave clean combs, and the disease returned. I've caged a good many queens, gave no clean combs, but left the diseased combs, released the queen in ten days, and in the great majority of cases there was no return of the disease. In a very bad case I would kill the queen; but a good beekeeper should never allow a case to get so bad as to need the queen killed.

R. F. HOLTERMANN, p. 944, you think I never saw a moving-picture show. Oh, yes! I'm fond of a good movie. Then you want to know how many straight lines there are in a circle. I suppose you want me to say an infinite number of infinitely short lines. But I know a better answer than that—there's only one line, "a curved line," as the dictionary has it. And now I'll agree that, when there's danger of a comb breaking out, your way of handling is excellent; but just as soon as possible I'd try to have all combs so that so much ceremony would not be needed.

FRANK L. POLLOCK relates, p. 937, "that almost every bee that took wing loaded from the cappings ejected a fine spray of fluid before reaching the window." That reminds me that when bees are robbing a hive or a super, especially if the entrance be small, all about the entrance is daubed and sticky. May it not be merely the ordinary evacuation? [You will remember we reported how bees taking thin syrup from an outdoor feeder would emit a fine spray on taking wing. We had supposed that this fine spray was nothing but water, and that it was a trick of nature which we have not fathomed, by which bees can, while on the wing, eject a large amount of water either from nectar or from thin syrup. If the bees cast this spray while gathering thick or well-ripened honey immediately on taking wing, then our fine-spun theory has received a jolt.—ED.]

E. F. ATWATER, you gave me a scare when you came down so savagely on dummies, p. 928; but on reading further I found you objected only to their flimsiness. You're dead right in that. Such flimsy things as I've seen sent out are a disgrace to manufacturers. But aren't you a bit off in thinking that a dummy not over ⅜ thick must necessarily be flimsy? I had a few an inch thick, but nearly all are 5-16; and after 25 years' use I don't see but they stand the racket just as well as the inch ones, all but the lugs, and I've remedied that by using a tenpenny nail strapped on with a piece of tin. Neither has there been any trouble with comb built at sides. You say the dummy is sooner or later thrown away. Well, I saw at Ernest Pike's eight-frame hives without dummy, and equal space at each side, and I'm not entirely certain it isn't an improvement. The self-spacing feature is *not* destroyed; and if you stop to think a minute you will see that with the usual arrangement we have less space at outsides than in center, and it seems there should be more. No, there's nothing wrong with a dummy ⅜ or 5-16 if it's made right, and 14¼ for ten frames, with no dummy, is an abomination. [We do not agree with your last sentence. We have been using our ten-frame hives 14¼ wide, hundreds of them, at our yards—ten frames without dummies. The fact is, the whole bunch of frames should be placed so that there will be an equal space on each side. The two outside combs may be built out a little in the height of the honey-flow, and that is all. As a general thing, a dummy, no matter what its thickness, is harder to get out of a hive with its full complement of frames than any one of the frames. One manufacturer, and possibly more of them, will leave out dummies in their 1916 hives.

The ordinary Hoffman frame will, by the accumulation of bee-glue and wax, space wider and wider until the extra quarter-inch is practically taken up. When the frames are new the 14¼-inch width is a trifle wide; but as the frames grow older the increased spacing for each frame makes the 14¼ about right. After a great deal of travel we are satisfied that the average beekeeper of large experience does not use dummies with a full complement of frames with either an eight or ten frame hive.—ED.]

J. E. Crane

SIFTINGS

Middlebury, Vt.

Bees here in Vermont are in most excellent condition this fall, and the ground is better covered with clover than for many years past; but our next year's crop of honey will depend on the coming months.

* * *

Editorial entitled "The Abuse of Bait Sections," page 831, Oct. 15, is timely and to the point. To my sorrow, I have been caught once or twice by using them. Who can tell why it should granulate in such combs sooner than in newly made combs? and why should comb change to a dirty yellow by standing empty for eight or ten months? and why should honey fed back to finish sections be darker than when fed? Who can tell?

* * *

In giving his treatment of foul brood, Mr. Greiner tells us, page 751, Sept. 15, how he saved his hives but burned all his frames and combs. It was well to save the hive, but why burn all the combs? Why not make them into wax worth, perhaps, 30 cents a pound, or quite a dollar's worth of wax to the hive, and then burn the slumgum? The heat will kill all germs of foul brood, and you save just so much.

* * *

On page 742, Sept. 15, the editor says of fall-united colonies that "for some reason they do not seem able to get together as one working unit like a regular colony," which reminds me of a yard I visited a few weeks ago. I found the colonies nearly gone with foul brood, and advised the owner to break all up. He was anxious to save some bees, and united five into one colony, putting them into a large oblong hive without frames. When I called on him again I found these five small colonies had clustered in the top of his hive as three distinct colonies—three of them going together at one end and the other two occupying each of the two opposite corners, and each of the three building separate sets of combs.

* * *

That article by Allen Latham, beginning on page 887, Nov. 1, is to my mind one of the best, if not *the* best, in this number of GLEANINGS. Mr. Latham is a typical Yankee, and never does things because some one else does, but does his own thinking, and takes the path that is most likely to accomplish his ends without regard to what others think, or the difficulties in the way. That the rules he lays down will work where there is a good flow of honey I have not the slightest doubt, for I have produced tons of non-separatored section honey myself. But I wanted to call attention to the fact that the rules he lays down are of as great value in the production of honey with separators as without them.

* * *

It does one's soul good these frosty mornings to look at those photographs of flowers by J. M. Buchanan, of Franklin, Tenn., on pages 842, 843, Oct. 15. I notice, however, one is not named correctly. It is a boneset, sure, but not *Eupatorium perfoliatum*. There are sixteen species of the boneset family. Mr. Buchanan says the species his illustration represents grows on high lands, and furnishes a good crop of surplus honey of fair quality, light amber in color, while *E. perfoliatum* grows on low lands or in swamps, and the honey, while a light amber in color is quite bitter. Gray says of it that the "leaves are lanceolate, united at the base around the stem;" *i. e.*, they are without any petiole or leaf-stalk, and the stem perforates the leaves; hence the name, "perfoliatum." It is generally known here in the East as thoroughwort.

* * *

How beautiful are the lines of Grace Allen on page 881, Nov. 1, "The Lament of the Drones"! How often has a feeling of sorrow and sadness come over us as we have seen the drones driven from the hive to die of cold and hunger! And the workers, too—how brief is their life—not much if any longer than that of the drones, except those which come on to the stage in late summer or early autumn! They may live through the winter only to perish in the spring. But such is life on this earth. The flowers bloom and quickly wither. The leaves that have clothed the earth with beauty through the summer at the approach of autumn drop to earth and turn to dust. And man, even, opens his eyes upon a world of life and light and beauty, and in a few brief years closes them in darkness. What does it all mean? Surely life is the great unsolved problem, until our hearts are touched by the Spirit of the Most High, and we look up and recognize our kinship with the infinite, and hear the words of the Master, "Because I live ye shall live also." Isn't it just grand to think we may live on through the ages while material things perish?

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.

There was an annual meeting of the California State Beekeepers' Association held in San Francisco in August, at which the election of officers was reported. Now comes the announcement that the State Association meeting will be held in Los Angeles in December. I am wondering how many annual meetings can be held within one year. I had been led to believe one annual meeting was all that was possible within a year, but it seems that I have been mistaken.

* * *

There is a certain difference in colonies of bees that is so striking that sometimes it seems the apiarist must get acquainted with each colony. We come to a colony that seems to have time only to rear brood; another is in quest of honey, and the bees are doing their best to store quantities of it, jamming it into the brood-nest to the detriment of the future strength of the colony; another may be strong on pollen-gathering. To manipulate and regulate the course of the individual colonies is the task of the apiarist, and one that will often pay big returns.

* * *

It was my great pleasure recently to visit one of the districts of the state where the eucalyptus yields sufficient to give a surplus. My bees are lying dormant or practically so, with very little if anything yielding them a load of pollen or a stray load of nectar, back in the foothill region. But in this land of much eucalyptus I was surprised as well as pleased to see them line out for the blooming eucalyptus. The flight roar was well defined and heavy; the unmistakable weary-winged fall upon the alighting-boards told of nectar in goodly quantities. The inner life of the hive was all excitement with the queens busy, and all of the hive force diligently bending to their task. This flow will last several weeks yet, perhaps until the middle of January, by which time an abundance of bees will fill the hives. Those of us who are depending on wild flora are wondering if we shall get sufficient rain to save our fast-drying crops of filaree that we may have an early source from which to stimulate our colonies.

* * *

The much-talked-of "new bee disease" seems to have found its way into the land of sunshine as well as the upper coast region, where they have eleven months of wet weather and August. So far as I know, the only place it has appeared here is in the vicinity of Fullerton, Orange County. All I learned of it there was from Mr. J. E. Pleasants, inspector of that county. Mr. Pleasants said there was a small district where several apiaries had been and were still badly affected by a disease which he remarked was much the same as described in the October issues of GLEANINGS. There are some queer citations in connection with its appearance. If I am correct, Mr. Pleasants said the disease first made its appearance in the apiary of Mr. Green, recently of New York, who purchased the George Emerson bees.

Mr. Pleasants also told of visiting the apiary of Mr. Seligman last spring, finding them in perfect condition, strong and busy. Within six weeks of that time he was called back to examine them again, Mr. Seligman having reported them dying. Mr. Pleasants went at once, fearing black brood. When he arrived he found the bees crawling out of the hives by the thousands, some hives having dead bees an inch deep in front of them, and the hive force badly depleted. The brood was dying, apparently in all stages. I asked many questions, but Mr. Pleasants seemed to think the disease was distinguishable from paralysis. In many respects he said it resembled that disease, but he had never seen paralysis act just as this disease did.

From the description given in GLEANINGS of its disappearance with good weather it seems at variance with the conditions here. The disease has been persistent during the entire summer in some apiaries, and surely a climate with open sunshine and no rain would obliviate it if that alone were a cure. Three miles from the apiary of Mr. Green, which had the disease so badly, he has another apiary, but over a range of hills. Of the many queens introduced in an effort to eradicate the disease, a part of each shipment was introduced in the apiary last mentioned. It remained in perfect health and fine condition, while the other continued to dwindle away. I should like very much to visit this apiary for my own observation, though I do not claim to be an expert on disease. Mr. Pleasants' opinion should carry considerable weight, as he has been a beekeeper for more than forty years, and inspector of Orange County for a number of years.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas.

BULK COMB FOR THE NORTH.

Why cannot bulk comb honey be profitably produced and successfully marketed in the North when we are packing and shipping it out every month in the year, including the coldest winter months? I can see no reason why beekeepers of the North cannot make it profitable business to produce this kind of honey for the market, during the summer months, at least. Granulation, which is the chief argument advanced against bulk comb honey for northern latitudes, would not play any part at that time. We are successfully marketing this product during the entire winter, by packing it as we get orders for it, reliquefying granulated extracted honey and putting it over the packed comb honey warm. It reaches the market in excellent condition, and is sold and consumed before it has time to granulate again.

BULK COMB HONEY AND BETTER PRICES.

With the proper distribution of our honey crops there would be a greater demand for honey and at better prices. This is one great obstacle confronting not only the beekeepers but producers of all kinds. Only the exceptionally well-organized producers are marketing their product with any marked success. Attempt after attempt has been made to organize the beekeepers, although but little has been accomplished in this direction. Consequently the individual has to look out for himself and work up schemes of various kinds to enable him to get his product on to the market. Along with these schemes the production of bulk comb honey for at least the home market and territory near by will work for excellent results. There is not a neighborhood that does not demand some honey; and advice has been all along the line to look after the home market first of all, and then, and not until then, ship to other places. Comb honey is always in demand if it can be obtained at a reasonable price. Section comb honey is necessarily expensive for the masses. But bulk comb honey can be produced so much more cheaply and easily that the price for it is within easy reach of the majority; and as a result a great quantity of the honey from the beekeepers' apiaries would find its way into the home market and prevent glutted conditions in the general market.

BULK COMB, PREPARING FOR ITS PRODUCTION.

This is the time to begin preparations for next season, and first for consideration comes the necessary amount of supplies that will be needed. Supers nearly always come in for their part in our "preparedness" program. In this connection I should like to emphasize again the matter of preparing for the production of bulk comb honey on at least a small scale during the coming season. I suggest this, not because I am "daffy" on the subject of bulk comb honey, but because I honestly believe that its wider production will result in great benefits to the beekeeping industry, and the beekeepers reap better rewards for their efforts.

In making these preparations you may want to supply yourself with some supers like those we use with shallow frames. The number of requests for information on this subject alone during the past two years has been amazing, and comes from all parts of the globe. More questions are asked about the style of frame best adapted for this purpose; and since we have had over fifteen years' experience with the production of bulk comb honey in all its phases, and with many different kinds of hives and other paraphernalia, we do not hesitate with our recommendations.

On page 1034 is a picture of one of our warehouses in which a dozen of us are shown nailing up a carload of three thousand supers and 30,000 shallow frames for our own apiaries. These are the regular deep shallow extracting-supers, 5¾ inches deep, and holding ten shallow frames 5⅞ inches deep, making a standard-sized super for the regular ten-frame equipment. Especial attention is called to the fact that the top-bars of all of our shallow frames are only ⅞ inch wide and ½ inch thick. This is a big improvement over the wider and thinner top-bars usually put out by the factories. The improved frames have greater strength, and allow more open space between the frames and from super to super, giving freer communication throughout the hive that is of inestimable value in increased production of honey. The top-bars are not grooved either—the thin-super foundation in full sheets being put in with melted beeswax. The groove is absolutely unnecessary, weakens the top-bar, causes delay by necessitating the tedious insertion of the foundation into it if the frame is grooved, and, after being once filled with wax, it cannot be used again after the honey is cut from the frame, anyway.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.

CELLAR WINTERING FOR BEES.

"I understand you have been successful in wintering bees in the cellar. Last winter I was not successful in outdoor wintering. Bees died on the bottom-board during February and March, and dwindled badly in April and May. I wish to try cellar wintering. Is there danger of keeping the cellar too warm?"

With good pure air, 60 to 65 degrees of heat might be borne for a few days; but should that be kept up for four or five weeks it would doubtless start the bees to breeding, which would be very undesirable, especially during the first half of the winter. Then such a high temperature would be liable to cause a loss of bees from their leaving their hives and flying toward the light, if there was any crevice through which the light could penetrate; and if the cellar was totally dark, those that left the hive will be lost on the cellar bottom. We have been told that the bees that leave the hive would probably die of old age under any circumstances, and that their loss on the cellar bottom is better than to have them die in the hive. This may be quite largely true when the temperature of the cellar is kept below the point at which bees are accustomed to seek the open air; but when that point is exceeded, my experience has been that they begin to seek the open air; and the longer their confinement at a high temperature, the greater is that inclination till a loss comes about which is detrimental to very many of the colonies.

I am satisfied that fifty degrees is too high a temperature for successful wintering. Cellars differ; but the right temperature, as determined by the quietness of the bees, will generally be found to be between 42 and 47 degrees. Much also depends on the strength of the colonies. Weak colonies will bear a much higher temperature than the strong ones; but with all weak colonies it will be harder to get and keep the higher temperature without artificial heat.

"My cellar is 20 by 30 feet and 8 feet deep, and I wish to put 60 colonies in it."

With a cellar of that size and the number of colonies mentioned I should judge that the bees would winter all right without any special attention to ventilation. From past experience I should expect that your trouble, if any, would come through the matter of temperature rather than ventilation. The normal winter temperature of most cellars is generally too low for the successful wintering of bees. If the cellar mentioned is an average one the successful wintering of so small a number as 60 colonies in it may require strict attention. The reason of this is that 60 colonies, without aid, would hardly keep the room warm enough.

If the temperature of the cellar goes no lower than 37 degrees in the severest weather when it contained no bees, it probably would be all right for 60 colonies; but should it go to 28 or 30, then more bees or some other way of raising the temperature would be required to make successful wintering certain. It is well to remember that a cellar which is warm in very severe weather will be cool in warm weather; and a cellar that is too cold in severe weather is apt to become too warm in a mild or warm spell in winter; and with such a cellar one is almost at a loss to know just what to do at one extreme or the other.

"How about getting the bees in the cellar? Is it necessary to use smoke?

I never use smoke when setting bees in the cellar; and if care is used, no smoke is necessary. Be careful about unduly disturbing them. Put them in at a time when they are not easily stirred. If through any mishap a colony is likely to be thoroughly aroused, they can be kept in the hive by using a cloth of sufficient size to cover the entrance fully. Make the cloth pretty wet, and put it up snug against the entrance so as to exclude all light. However, this wet cloth must be removed as soon as the bees are in the cellar, otherwise a scramble to get out may result in the loss of the colony through overheating and lack of air. Take the bees in on a dark day if possible, when there is little wind, with the temperature between 35 and 45 degrees.

Prying hives up in freezing weather will unduly disturb any colony. See to it beforehand that there be no undue noise, cracking, or jarring, when they come to be taken in; then when the time comes to take them in, pick each hive up firmly but gently, carrying it to its winter restingplace, setting it in place as gently as it was taken from its stand. Two men with a rope of suitable length can carry bees in, so that they will hardly know that they have been moved. And one man with a spring wheelbarrow can do nearly or quite as well by using a heavy blanket or quilt folded so there will be several thicknesses between the hive and the wheelbarrow.

GENERAL CORRESPONDENCE

SOME INTERESTING WINTERING EXPERIMENTS BY AN EXTENSIVE BEEKEEPER IN IDAHO

A Comparison of Four Different Methods

BY JOSEPH J. ANDERSON

In the North the wintering problem will always be a regular part of the beekeeper's work if success is to attend his efforts, just as the wintering of sheep or cattle presents its peculiar problems and brings its exacting labor to the shepherd or cattle-breeder. There is this material difference, however. When our bees are put away for winter the work is over—no wading through the snow nor exposure to the cold blustering storms, carrying grain or forage or providing them with water.

Not enough attention is paid, at least by the beekeepers of this Rocky Mountain section, to this important problem, although its significance is coming to be recognized more and more. With young and vigorous queens, a hive full of young bees, and ample stores, the battle is half won.

With a view to determining the best method, if such there be, of winter protection, I tried last winter four different methods. At my home yard I put into my cellar, a log structure set into the edge of a hill, and facing the north, 158 colonies. See Fig. 1. These, on account of the mild weather and the difficulty of keeping down the temperature in the repository, I was compelled to take out March 17. It was too early, but the insistent restlessness of the bees compelled it.

Half of these were tiered with bottoms removed, the covers left on. They were set about four inches apart. The lower tier was set on two poles, and the upper tiers, with the middle of the hive over the four-inch space between the two hives below it, break-joint fashion. The other half I tiered up close together with covers removed and burlap over the frames.

The unrest of the latter colonies as compared with those that had the bottoms removed was very marked—so much so that I found it necessary to remove the bottom-boards from some twenty or more of them and tier as the others, when the bees at once became quiet. Hereafter in my cellaring, all bottom-boards shall be removed.

When these bees were taken out of the cellar, March 10, only four colonies were dead, of which two I knew to be queenless when put in. By May 6, however, 13 more had succumbed, making a total loss of 17, about 10.8 per cent, if the queenless ones be counted. The general condition of these bees as regards strength and vitality was first-class.

At my north yard, the principal outyard, 333 colonies were packed as follows. See Figs. 2, 3, 4, 5, and 6.

Eighty-seven were "heeled in," or banked up as shown in Fig. 6. I first prepared 87 bee-escape boards by sawing out a 1½-inch piece from the rim near one corner, and tacking a thin strip underneath to prevent breaking. This made the entrance at the top, for the bottom was closed by dirt. Then these 87 colonies were set in a row facing the south, and as near together as possible. Next an escape-board, with escapes removed, was placed over each hive,

Christmas Fancies

BY GRACE ALLEN

Bees of mine, no longer humming,
Christmas Day is coming, coming,
With its thoughts forever bringing
Dreams of far away,
Of that dim and distant morn
When sweet Mary's Babe was born.
How the bells go ringing, ringing,
Christmas Day!

As he grew a little lad,
Were the bees, I wonder, glad
In sweet Mary's flowers to meet
When day began?
Then from vineyards warm and sunny
Did they garner choicest honey,
Rich and rare and heavenly sweet,
For Mary's son?

May be sometimes in the grass
He would smile to hear them pass,
Buzzing so through all their jolly,
Genial lives!
For these fancies, vague and fleeting,
Bees of mine, I give you greeting,
And I lay a sprig of holly
On your hives.

with the opening in the rim down and to the front of the hive. Then a super with a cloth tacked on the bottom, and filled with packing, was placed over the escape-board, and over all the hive-cover. Then a little straw was placed in front of the hives to keep the dirt out of the entrances and the hives banked up all around with dirt, the only opening being the small notch sawn in the rim of the escape-board at the top. When taken out of packing, April 25, five colonies were dead. May 6 a second inspection showed twenty-four dead, or 27½ per cent loss. Five were very weak.

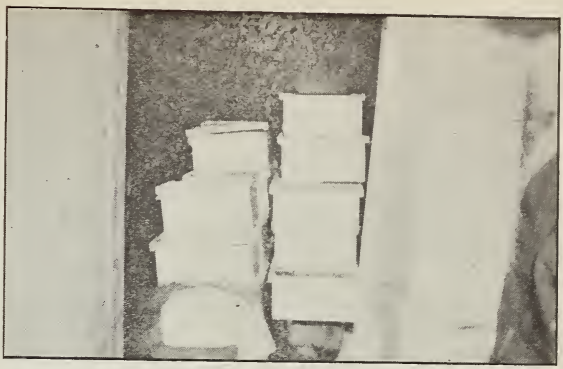


FIG. 1.—Anderson's home bee-cellar, looking in the doorway.

Sixty colonies were packed in quadruple winter cases as described by Mr. Holtermann, packed with planer shavings and sawdust. See Fig. 2, right foreground.

These wintered well, and on April 25 only one was dead, and this I put in queenless as a test; but on May 6 I found a total of 11 dead, or 18 per cent; very weak, two. In general these colonies seemed to be stronger than the rest in this yard.

One hundred and eighty-six colonies were placed in double rows, back to back, facing east and west. See Figs. 3 and 4. The hives were about four inches apart in the row, and the rows about the same distance apart. I next packed fine chaffy straw between the hives, and covered all over with about two feet of straw stacked so as to shed the rain. Hive-covers were left on.

Of this lot six colonies were dead when unpacked on May 6. At the second inspection I found 31 more, or a total of 37 dead, or 20 per cent. Eight were very weak.

When the bees at this yard were unpacked, only 12 colonies were dead. A spell of beautiful warm weather made me think the proper time had come; but cold stormy weather set in, and on May 6 a total of 72 dead colonies was found, and 15 very weak.

It will be seen that at the time of unpacking my losses were practically nothing; but ten days' stormy weather produced considerable havoc. The cellared bees wintered best of all; next, the bees in the quadruple winter cases; then those packed in straw, with those heeled in bringing up the rear, showing 27½ of loss in the spring storm.

In my field notes I find the following under date of May 6, 1915: "I shall not practice heeling in (banking up with dirt) any more; loss too heavy; bottoms wet and soggy; combs more or less moldy."

"The bunch of bees bought of —— last year were very strong; only 2 gone out of 53, and one of these was queenless. I recall now that on account of being very busy I did not get these bees until late, to take them out of packing May 14.

FIG. 2.—Anderson's north yard, showing beees packed for winter.

FIG. 3.—J. J. Anderson's straw-covered rows of hives.

I cannot account for the secret of this splendid wintering unless it was staying in packing until so late."

These were packed in straw, as outlined above. Hereafter a few fine days shall not inveigle me into unpacking. I shall be in no hurry.

Next spring I shall again furnish your readers with the results of my experience during the coming winter.

On January last, on his western trip I was delighted with a visit from our friend Ernest. He took a number of views illustrating the methods I was trying. The cellar wintering he pronounced perfect.

Salem, Idaho.

[As Mr. Anderson states, we called on him during the month of January, and had the privilege of seeing not only bees in the cellar, but those at the outyards packed according to the methods above described. The bees in the cellar at the time of our visit seemed to be in remarkably nice condition (see Fig. 1). At that time we took the picture looking into

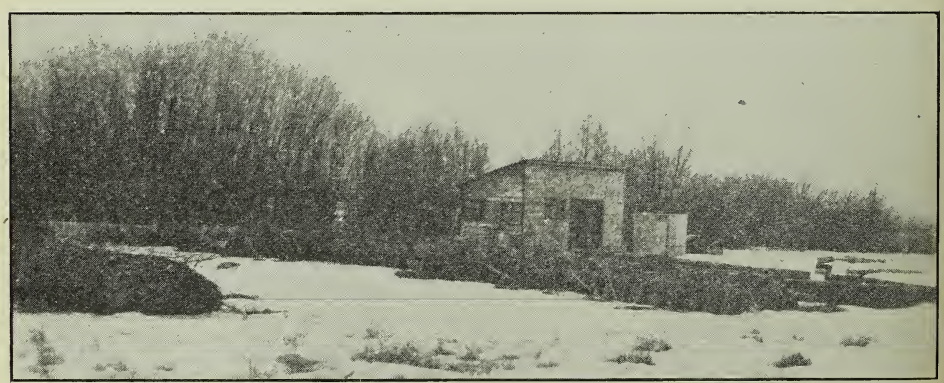


FIG. 4.—The windbreak on the south along the irrigation ditch.

the doorway. There was nothing to indicate that the bees in hives with bottoms were not doing as well as those with the bottoms removed. We explained to Mr. Anderson that there were two schools—the one advocating leaving the bottoms off and the other leaving them on, and that we should be interested in knowing which lot of bees in the whole number came out better. He tells us that those without bottoms were much quieter. The cellar was comparatively small for the number of bees in it, and we are not surprised that the bottomless hives showed up better in the spring. But where the cellar is relatively larger, it has been our experience and observation that the colonies with bottoms come out in better condition. We had an experience one winter in one of our cellars where the colonies with bottoms on were the only ones that wintered well, while those without bottoms showed a heavy loss of bees, many colonies dying outright before they were taken out of the cellar. It follows, therefore, that the question of whether bottoms shall or shall not be used on hives depends on the size of the cellar, the temperature, and the number of colonies wintered. We should say that, with a cellar 10 x 15, and 8 feet high, the bottoms had better be left off if as many as 100 colonies are put in. With half that number we would leave the bottoms on.

FIG. 5.—Mr. Anderson himself and some of his colonies packed in Holtermann winter cases.

On arriving at the north yard with Mr. Anderson we were very much interested in the different methods of packing. These experiments on so large a scale would be invaluable as the sequel has proved. We expressed to him the opinion that those in big quadruple cases of the Holtermann type would fare the best, and they did. When we came to look at the colonies that were heeled in, with upper entrances through the edge of the escape-board at the top, we were surprised and interested (see Fig. 6). We expressed a fear that the hot air at the top of the cluster would escape too easily through the top entrance, for it should be understood that the lower part of the hive up about two-thirds of the way was heeled in with dirt and packing. This, of course, closed the regular lower entrances. The fact that there was a heavy loss in this group was not surprising. Still, the loss was not nearly as large as we thought it would be; for it seems to be a fundamental principle that hive entrances for colonies in winter quarters should be at the bottom, primarily to hold the warmer stratum of air that naturally rises to the top, and is confined because it cannot escape.

The group of hives that were placed in long rows back to back we thought ought to winter nearly as well as those in Holtermann cases. See Figs. 3 and 4. There is one objection to this plan, and that is, bees in long rows are inclined to drift. When the weather is such that they can fly, and

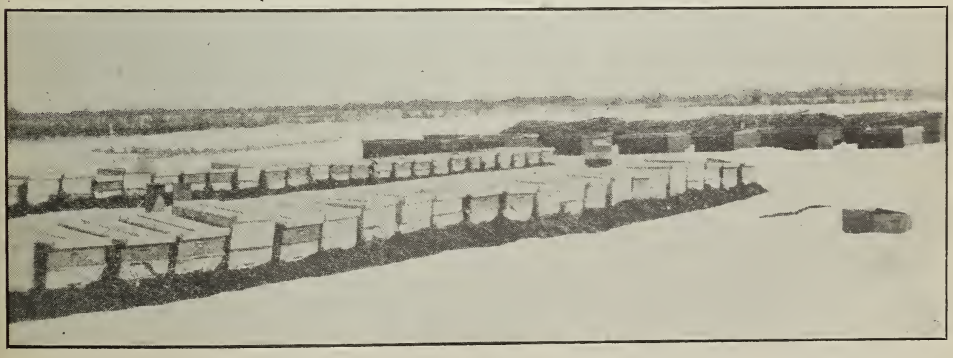


FIG. 6.—The hives that were heeled in with dirt; entrances at top.

FIG. 7.—Anderson's wax-rendering boiler, and the frames that had been put through the boiler to free them of foul-broody combs.

when bees will come out by the thousands those entrances where there is the greatest commotion will draw from the other entrances that make no demonstration. This has been the experience of many beekeepers.

We took a number of photographs as shown from 1 to 7. Fig. 1 shows a view looking into the doorway at the home cellar; but only the hives, of course, in the foreground can be seen.

Fig. 2 shows colonies in the middle background packed in the Holtermann winter cases.

Fig. 3 shows those colonies that were packed in long rows back to back and close together, covered with loose straw and brush over all to hold the straw down. Mr. J. J. Anderson is seen in the foreground.

Fig. 4 shows a more distant view of the hives packed in long rows with the honey-house and the windbreak of trees on the south along the irrigating-ditch in the foreground.

In Fig. 5 Mr. Anderson is again seen sitting on one of the winter cases.

In Fig. 6 we have the group of hives that were heeled in at the bottom with upper entrances. It will be remembered that this group showed up the poorest of any.

In Fig. 7 we have an exhibit that perhaps no one of our subscribers desires to have. The pile of brood-frames in the right background originally contained combs taken from diseased colonies. The structure in the foreground contains a large flat boiler heated by an arch from beneath. The smokestack in the rear furnishes the necessary draft. The little boy in the foreground is one of Mr. Anderson's children.

Mr. Anderson made no concealment of the fact that he had had American foul brood; but the pile of frames showed that he must have had a "big dose" of it, and, what is more, that he had gone at it heroically to clean it up. He believed he had done a clean job.

This large boiler was used for melting the combs; and when the combs were free the frames were thrown on this pile after being immersed in hot water. With all the honey and wax removed, there would be practically no danger of further infection. Many of the frames were damaged, others were odds and ends, and he was not sure whether it would pay him to use them again or not. He was inclined to think he would not take the chance. While they were harmless in the pile, there might be danger if new combs were built into them again.

The winter weather in Idaho seems to be like that of Ohio—climate drier.—ED.]

My home apiary depends on the flora of the marshes for surplus. We have several hundred acres in this locality, which in favorable years yield a heavy flow. In 1913 my crop was 382 lbs. per colony, nearly all from the burr marigold.—WILLIAM WESTON, Essington, Pa.

HOME-MADE VS. FACTORY-MADE HIVES

BY LEWIS L. WINSHIP

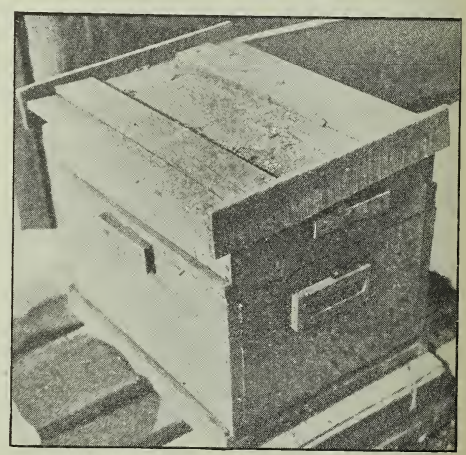
The question of home-made vs. factory-made hives has been discussed pro and con until it would seem highly improbable that more remains to be said. Such does not seem to be the case; and the more said, the more remains to be said. In years to come, there is some chance that this question will be settled once and for all.

To my way of thinking it might as well have been settled years ago. There is only one conclusion to which a fair-minded thinker can come; and that thinker, when he comes to a conclusion, will want factory-made hives. The average home-made hives are fit for nothing so much as kindling-wood. For this they are excellent, as the coating of propolis on them saves kerosene. If you happen to be a representative of that class of noble and high-minded men, viz., bee inspectors, I know you will quite agree with me.

I am speaking on good authority, as last spring I took three hives (if you can call them by that name) of bees on shares. I was to have all the increase and half of all the marketable honey secured. The man from whom they were taken was a nursery-stock agent; and so, when the busy season for the bees was on, he was also busy with his nursery stock. He spent his time in the winter making new hives and, when prosperous, had many colonies of bees. But as time passed his bees dwindled down to the three colonies as bees will whose owners make their own hives. Now, do not think that I mean no beekeeper can make hives as good as the factory-made article, because some few of them can; but (and here is the "rub") they usually try to economize in every possible way; and the hive when finished usually looks like the one in the illustration.

Beekeepers seldom try to make frames, as they know that the factory-made article is far superior to their best efforts. But this man was one of a reckless few. He may have thought he could do it, but he could not make me agree with him. Every one is prone to believe that he can do any thing better than the other fellow; but it is rare that the other fellow agrees with him. The probable reason for the delusion was that he never opened a hive, and so could not see why his frames were not as good as those factory-made. Why, this man was even feeding his bees dry sugar in a little saucer above the frames in April, and wondering where the honey was coming from, as they were not using any of the sugar. He did not stop to think that there were blossoms all over God's green earth, all of which were abundantly yielding nectar.

Starting with the cover I shall describe one of his hives similar to the one in the photograph. You can see that the structure is made of a drygoods-box, and that one corner of the cover is at least three inches lower than any of the others. When the sun shines very bright and hot, the cover serves to some extent as a shade-board; but, oh my! when the first rainstorm struck it I came near taking it into the house for a sieve. The water poured in torrents between the combs, and the poor little bees were washed out the entrance. The first thing I did after the shower was to put tin over all three of the covers and paint them two coats, to prevent a similar disaster.



The hive was made from a drygoods-box.

The super was one of the greatest pieces of ingenious mechanism I have ever had the sorrow to look upon. A Philadelphia lawyer could not place empty sections in it. I did not attempt such a hazardous job, but set a factory-made super in its place. Even if a lawyer could have put sections into it, a preacher would most certainly have discharged a volley of oaths if he had had to remove the sections when they were full of honey.

The brood-chamber, if it may be given that name, was more a nursery for worthless drones; and if the hive were mine it would certainly have been used for kindling-wood, and the bees transferred into an up-to-date factory-made hive. The frames were

all built one way of the hive; but through his trying to economize on foundation the combs were built this way and that, making it practically impossible to remove one frame without removing them all. The lumber probably cost as much as would a whole new factory-made hive. As you will notice in the illustration, the maker strived to have his hives easy to handle by grooving out blocks and nailing them to the body.

It must have taken him at least a day to make a hive. Valuing his time at even two dollars a day, which is a very conservative estimate, and figuring the cost of the lumber at par, you can very easily see that it would have paid him well to purchase his hives from some reliable manufacturer. I have not mentioned the gratification one feels on opening a factory-made hive and seeing how every part fits. After using them side by side for two years, one appreciates the factory-made hive more and more.

You beekeepers all know that it is not so much the amount of brood-comb in a hive that counts, but the amount of worker comb. To get all or nearly all worker comb in a hive you must use full sheets of foundation or else get your bees to working on starters at just the right time of year. Few beekeepers know just when this time is, and therefore it behooves us to use full sheets of foundation and not risk getting a lot of useless drone comb in our hives.

To all beekeepers who will persist in making their own hives, let me say, buy your frames and use full sheets of foundation. With lumber as high as it is now, it hardly pays a would-be carpenter to experiment with it. The hive shown, with the exception of the cover, is better than the usual run of home-made hives, and you must be quite a carpenter to make one as good. I would as soon get a full-blooded horse or cow and put it in a shack, every crack of which you could throw a cat through, as to put bees into ninety per cent of the home-made hives.

When purchasing your hives be sure to get those having a metal roof—that is, if you live in a climate as severe as that of western New York. If I have not persuaded you to purchase factory-made hives instead of making your own, a glance at the photograph will at once cause you to make up your mind.

Springville, N. Y.

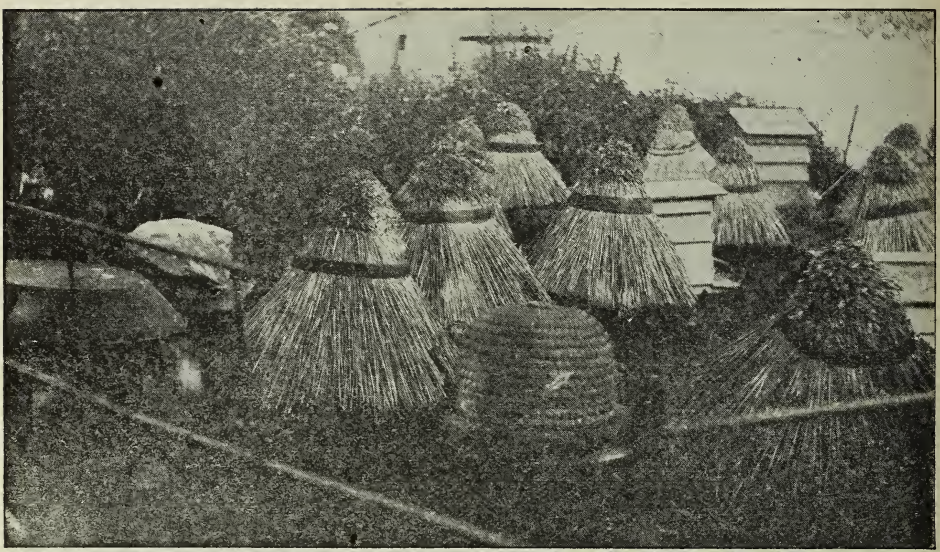
A COTSWOLD VILLAGE; GLIMPSING OLD-TIME BEEKEEPING IN RURAL ENGLAND

BY A. H. BOWEN

There is nothing more soothing than the languid content that broods over an old-fashioned garden plot in a Cotswold village, with its careless order and unsystematic arrangement. It is all the more beautiful because everything is allowed to flourish in its own sweet way, and the colors blend one with another in perfect harmony. It is here, too, that the old straw skep abounds, and where bee lore and quaint customs survive among the simple village folk.

As September wanes, the bee-master pre-

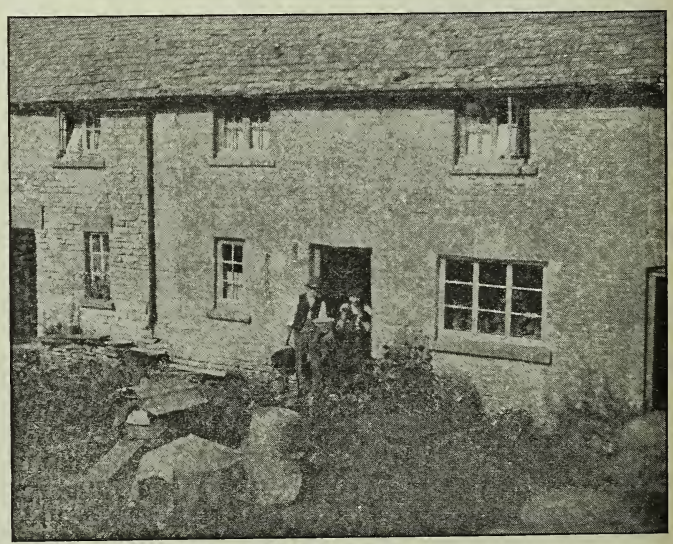
A corner of a typical Cotswold skep apiary. Three stocks gave eleven swarms, "casts and lobs," and made the owner justly proud of his extensive apiary.



Straw hackles keep the hives cool in summer and warm in winter.

pares to gather from his unpaid laborers the result of their summer's toil among the blossoms. The annual honey harvest is a welcome and looked-for pleasure to all who keep bees in the old-time way, and the skep supplies yearly a quantity of delicious honey that is carefully kept for use in the long winter months. The time was when this yearly looting of the little brown workmen was a much more serious matter than now. Before the sugar-cane was domesticated from the wild weed, and the various other sources of sugar had been utilized it was upon the village skeppist that the community relied for its sweet. It is pleasant to visit a Cotswold bee-garden at this time of the year.

Nestling in a quiet corner overhung with lilac bushes could be seen an irregular row of a dozen hives, each on a stool of its own, with a covering or thatch of straw hackle, clipped away at the entrance, and surmounted by an iron hoop to keep it rigidly in place. If in a talkative mood the owner might be induced to explain which lots were the prime or first swarms that "ring out" for a week in a mass from the entrance, and finally swarmed on a hot sabbath morning; or of the nimble "cuts" that came out and returned several times before they allowed themselves to be captured and placed on a stool to commence for themselves "the daily round and common task" of collecting honey.



A cottage off the village street. It has been inhabited by its present owner and father before him for nearly 75 years. The rental of this, a productive garden, pig-styes, and potato-shed, is three pounds a year ($14.55), an amount the owner considers very dear.

A progressive Cotswold garden apiary. Notice that the owner has launched out into a few modern hives, homemade but serviceable, from which good returns of honey are obtained.

And so the months of summer would go by until, with the arrival of September, the bee-master would prepare to gather "the fruits in their season." In the crimson gloaming of late evening might be seen a dusky figure moving among the hives. It is the beeman "hefting" his skeps, and marking those which shall be "taken up," and these, too, that must remain to provide swarms next season. Next he digs a shallow pit near by; then a piece of brown paper thickly plastered with brimstone is let in the cleft of a small stick stuck at the bottom of the hole, and lighted, and as the sulphurous flame burns brightly the heaviest hives are lifted over and earth thrown against their sides to keep in the fumes. A sudden fearsome buzzing arises from the skep; but it is gradually hushed to a deathlike stillness as the deadly sulphur smoke does its work of destruction.

Then the honey is set a-dripping over a pan in the cool larder, where the wasps cannot infest. When all runs out the crushed honeycombs are washed to make a cask of methheglin and then rendered down into wax. Taking-time reduces the hives to half the summer number, and each lot would be carefully plastered to its stool with mortar as a winter precaution against mice that might creep in when the bees were dormant.

Whether the bees are suffocated or got from their hives by the more humane practice of driving, it matters not to the villager who leaves the whys and wherefores to wiser heads than his own, knowing only sufficient to make the humble skep a source of income.

Cheltenham, England.

J. Y. DETWILER

BY E. R. ROOT

Down in Florida, at New Smyrna, is a man named J. Y. Detwiler—the only J. Y. Detwiler in the world, for the simple reason that there could not be another. He is one of the most unique characters that one ever meets. As he says of himself, he is an "everlasting talker;" but his talk is not idle nor without pith, point, and ready wit. It is as good as a circus to hear him talk as he draws on his wonderful fund of information.

A beekeeper? Yes, for many years away back in Toledo, where he formerly lived. An orange-grower? Yes, he knows all about the business. A landowner and real-estate agent? He knows every angle of that line, and can talk interestingly to you about good and poor lands in Florida for hours at a time. Fish and game? Yes, he knows about all the animals that walk, creep, or swim in that south land. He is, or was at the time of my visit there, two or three years ago, the game and fish commissioner of Florida. That he would make a good commissioner—one who would enforce the law to the very letter—can be plainly seen in that strong face and the tightly drawn lips that seem to bespeak "You obey the law or take the consequences."

Mr. Detwiler is so well known that an artist or sculptor, seeing that face, said, "Oh! here I have a model;" and he set to work to reproduce the original in clay. We secured a photograph, and the picture before you shows the only J. Y. Detwiler who ever lived or ever will live—the loquacious

irrepressible Detwiler. A photograph of the living subject could not be more accurate than this model in clay, for it shows the man at a single glance as he is.

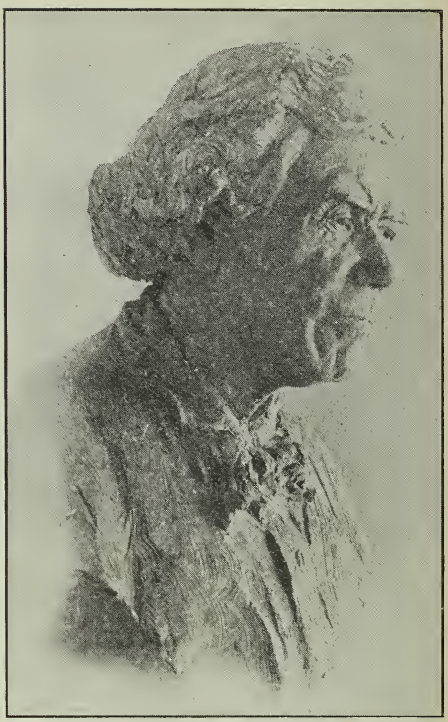
I made Mr. Detwiler's acquaintance in Toledo some years ago when Dr. A. B. Mason was alive. The two were fast friends. One day at a bee convention Mr. Detwiler came in with a very crooked stick and said he wanted to present it as a souvenir to the venerable Dr. Mason, the presiding officer. He could "talk by the yard," but he could not make a "presentation speech." Then he asked Mr. Emerson E. Hasty "to do the job"—the same Hasty who delighted our readers some twenty and more years ago by his bright and breezy articles. Mr. Hasty jumped to his feet; and as he did so he said, "Do you want me to make a speech right on the spot?"

"Right on the spot," responded Mr. Detwiler.

As the former looked at the latter, and saw his rough exterior, he cast his eyes on the cane with all its knots and curves and crooks; and as he looked at the venerable president with a beaming smile, Mr. Hasty's face suddenly lighted up.

"Sir," said he, "I see in this cane some knots, some twists, and some curves; and I see in it strength and character. It has had some rough experiences. It is like the man who gave it, and it is like the man who receives it. Both are men whom I delight to honor. I thank you." Then he took his seat.

Some twenty years after this event, and when I had forgotten all about our old friend Detwiler, I ran across him at New Smyrna, Fla. I say "ran across" him. He had written that he hoped I would call and see him. That he entertained me by his continuous flow of words goes without saying.



Clay portrait bust of J. Y. Detwiler, of Florida.

A HOUSE BUILT BY THE BEEKEEPER, AND PAID FOR BY THE BEES

BY B. KEEP

Accounts of successful beekeeping as a livelihood are interesting and encouraging as showing the spirit of hopefulness and persistence which animates the real beekeeper. The real, simon-pure beekeeper should be classed with the natural-born inventor who always sees success ahead, and is sustained by hope and faith in his efforts until success rewards his labors.

It is not often that the liking for honey induces one to take up beekeeping; but Robert B. Spicer, of Wharton, N. J., confesses that his love of honey made a beekeeper of him—not at the first with any thought of making it his lifework; that came as a natural sequence.

Mr. Spicer grew up in the country where there are more boulders than tillable soil—in fact, in the iron-mining section of New Jersey, and soon found more profit in cultivating bees than stony hillsides. He has been at it now more than twenty years.

He has had his "ups and downs" too, having been entirely cleaned out by foul brood about ten years ago; but through that experience most valuable knowledge was gained by which he has since been able to keep his bees free of diseases to the present time. He was able to save most of his equipment, and has hive bodies still in use which were disinfected with a blow torch at that time—the disinfection being evidently entirely effective.

Mr. Spicer has been engaged during the last six years in raising queens, and is about the only beekeeper of this state large-

Spicer built it himself, cellar to gable, and—

home. That's a genuine fact for he personally built it, from digging the cellar, mixing and laying the concrete for the wall, felling timber for the frame and hauling it to a sawmill, to plastering the walls and putting on the trim. Mr. Spicer admits he had his hands full in those days, raising queens and building a house between times. But "all's well that ends well." The young people have a comfortable home overlooking the hills and valleys of northern Jersey. The home has been paid for practically by the bees, which they prize more dearly than if it had been "showered" upon them.

ly in the business. This specialization is also the result of circumstances. At first he raised queens for his own use only; but, having a small surplus, he placed a two-line advertisement, which soon brought a demand which required so much of his time that he finally turned his attention to queen-raising exclusively.

Well, not "exclusively," for he took time to get married, and then began to build a

In July last year the New Jersey State Beekeepers' Association held its summer meeting at Mr. Spicer's yard, to which about eighty people found the way, although it is two miles from the trolley up among the hills. They enjoyed a practical day with Mr. Spicer among the bees, not forgetting the generous hospitality.

the bees paid for it.

Speaking of hills always brings to mind springs, and just now the spring where the Spicer household gets water. There are large stones (there is one near there the size of a load of hay) about the sides of the spring, and grasses and bushes. A great maple has its roots just behind; and to complete the setting there are always three solemn frogs sitting guard ready to "plunk" unexpectedly, and make one start.

The little poem by Secretary of Labor Wilson describes it so aptly that a quotation of the opening verse may be allowable. The title is, "To an Old Tin Can."

There's a spring of sparkling water flowing out beneath the hill,
Where the trees are tall and shady, and the robins sport at will,
As the breezes, soft and pleasant, in the summer's sultry heat,
Play about in cooling eddies where the light and shadows meet,
On a stone within those shadows stands a can of ancient tin,
With a band of rust about it and a coat of rust within;
And there's nothing God has given to appease the thirst of man
Like a cooling draught of water from that rusty old tin can.

Hoboken, N. J.

SOME INVENTIONS MOTHERED BY NECESSITY

BY A. BUTSCH

After living twenty-one years in the West Indies (just half my life) I can do but little hard work myself. The result is that most of the work must be done by ordinary laborers; and a more awkward and careless set of fellows it would be difficult to imagine. None in the lot can read or write; none of them knows his age. Their perception of right and wrong is about on a level with that of a well-bred fox terrier. With such help at hand, and with the inability of a European to do much hard work, beekeeping on a large scale becomes quite a problem.

Frail devices such as Hoffman frames, Bingham smokers, etc., which in gentler hands work nicely would here crumble away like match-sticks. Even the Cowan automatic had to be overhauled before it could stand the test.

The Hoffman frames were the first I used. They proved too weak. Either the frame came out without the bottom-bar, or the supporting projections or spacing devices would give way. In many cases where a brood-nest had not been taken to pieces for two years I found no other means of getting the frames out than to turn the brood-nest upside down and kick the whole arrangement out "en bloc."

The staple-spaced frames came out a little easier; but the staples are an abomination when extracting. With eight frames in a super the combs get quite thick, and the staples hidden in the honey play havoc with the extracting-knife. If one is prepared to carry a grindstone around in his out-apiaries, and to keep his temper, he may get along with staple-spaced frames; but I think the average beekeeper who extracts between fifteen and twenty tons of honey a year, and means to go to heaven at the end of his laborious beekeeping days, had better leave the staples out of the business.

This is exactly what I did. To prevent the bottom-bars from pulling out, I made them ⅜ inch thick and nailed them between the end-bars. The spacing-devices were left out, and the supporting lugs were replaced by a 2½-inch wire nail. The top, bottom, and end bars were all made the same width, the top and bottom bars being nailed between the end-bars. Now there I had a frame that was extremely simple and quite solid.

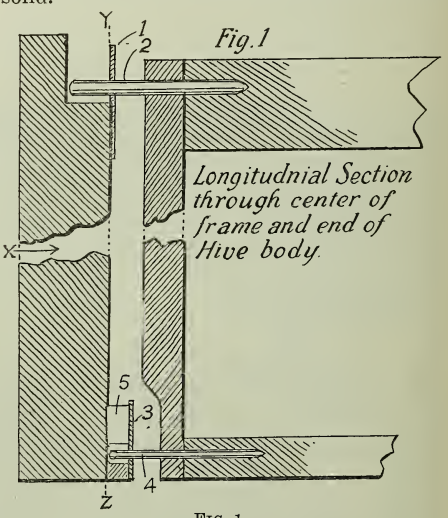


FIG. 1.

1, steel plate, 18-gauge, with top edge cut out as shown in Fig. 2, supporting the frames and side-spacing the top-bars; 2, steel pivots supporting frames; 3, steel plate, 18-gauge, cut out the same as 1, but with a notch at 7; 4, steel pivots for end-spacing frames and side-spacing top-bars; 5, wood strip 3/16 inch thick, holding steel plate 3 in position.

The trouble that now remained was how to space it. Notwithstanding the general

consensus of opinion expressed in the bee-papers I had come to the conclusion that for extracted honey, at any rate, the spacing-device should not be part of the frame, as any kind of spacing interfered with the ease and rapidity of uncapping.

Figs. 1 and 2 show how I got out of the difficulty. I intended at first to patent the arrangement; but although I have taken out several patents in gas and electrical engineering, and even had the rare luck of making some money out of them, I always look with some suspicion on the financial possibilities of a patent in beekeeping apparatus. The sketch sufficiently explains the device.

The frames are here simply thrown in the hives, and they will automatically space themselves. They can be picked out any time without tools. The top-bars can be pushed away from one another for the purpose of looking for brood or queen-cells without taking a frame out. There is practically no chance of killing any bees. These frames can be carted about quite as safely as Hoffman frames; and even with hives only partly filled with frames there is no necessity of doing any stowing away. The hive would cost a little more than the standard dovetailed, but the frames would be cheaper.

Fig. 2.

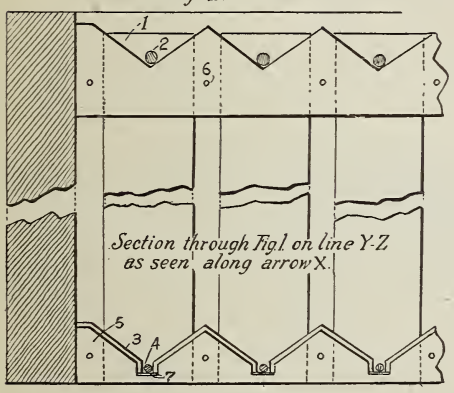
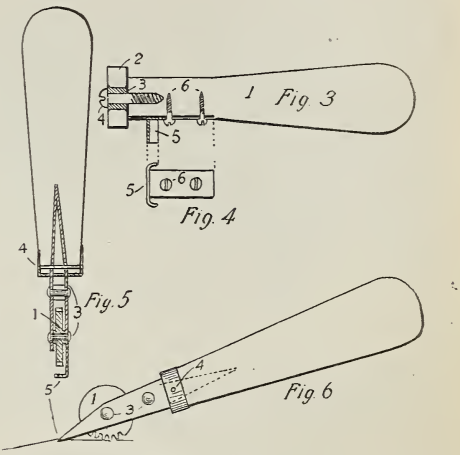


FIG. 2.

Nos. 1—5, same as for Fig. 1; 6, nail-holes; 6, deep notch in plate 3 and wood strip 5 for holding pivots.

The double groove and wedge proved too refined for West Indian labor. Besides, when the worms eat down the combs, as it often happens in out-apiaries, the wedge and thin strip are invariably eaten out, which makes it difficult to attach new foundation satisfactorily. With the roller shown in Fig. 3 the foundation can be very firmly attached to a plain top-bar in very quick time. The foundation must be slightly warmed in the sun before putting it in.

Even the ordinary spur imbedder had to be altered as shown in Figs. 5 and 6, where one of the side plates is prolonged and bent at right angles just in front of the wheel and a small notch filed out to guide the wire. With this implement wire can be



FIGS. 3 AND 4.

1, handle (hard wood); 2, wood roller; 3, babbitt metal; 4, steel screw; 5, brass guide; 6, brass screws for attaching guide.

FIGS. 5 AND 6.

1, brass spur-wheel ⅛ inch thick, ¾ inch diameter, 36 pitch; 2, side plate prolonged, and bent at right angle in point of wheel 1; 3 and 4, rivets; 5, small V notch for guilding wire.

expeditiously imbedded, even in the dark, as the roller cannot come off the wire. I use a very thick brass cogwheel with fine cogs without any set, thus firmly imbedding the wire without damaging the foundation.

For the last ten years I have made all my supplies, such as hives, frames, smokers, veil, foundation, shipping-cases, etc., and even an extractor. I own a small machine-shop with circular saws, engine-lathe, boring-machine, etc., with a fair supply of different boring and machine tools. The whole show is driven by a 2½ H. P. gasoline-engine.

It certainly pays to make foundation, whatever Arthur C. Miller may think. With what was worth 20 cents here, and light brood foundation at least 60 cents, there is a saving of $160 on the first 400 pounds of foundation made. It is true that, in the hands of many, the making of proper foundation is a tedious and unsatisfactory job. It takes some experience, and the instructions sent out with the machines are not worth much.

St. Lucia, West Indies.

THE WINTER CLUSTER

BY MARY G. PHILLIPS

Summer is gone, and the winter drops its mantle of snow
Gently from clouds of grayness to the dark-brown earth below.
Now beasts and furry creatures cease from their active play,
Hunt some quiet hollow where they snugly sleep all day.
Out by the leafless wood-lot stand the rows of quiet hives,
Mere undulating snow waves, hiding thousands of tiny lives.
How peaceful seem those houses! Are the inmates fast asleep?
Like other tiny creatures, is their dormant slumber deep?

Ah! under the snow-white blanket, all hidden from prying eyes,
Here life is teeming, bustling, in the row of quiet hives!
The bees are compactly clustered forming their winter sphere,
The outside ring is their vanguard to guard against cold severe.
Each faithful little worker stands at her meted task,
Fanning, fanning her life out to combat the icy blast.
Now one leaves the circle to seek the honey store,
Gathers strength and courage, then back to her work once more.

Brave little honey-workers! Beat, oh beat with all your might!
Warm the hive and your comrades, it is not always night;
The creeping chill will vanish, the sweeping wind will die;
Spring will come with its sunlight! Have courage, then you may fly!

Washington, D. C.

The first three hives (right to left) are cell-builders; the fourth a honey-producer, and the fifth a mating-box.

BUILDING UP A BUSINESS IN SHIPPING BEES WITHOUT COMBS

Will Wintering Bees Become Obsolete in the Extreme North?

BY W. D. ACHORD

About four years ago I began to ship one-pound packages of bees without queens by April 1, and with queens by April 10. I find that this size of package is best as early as weather in the North will permit the buyer to receive them. The first year or two we had considerable loss at times; but last year it was only about 4 per cent or less, while this year it was less than 2 per cent for the entire year. We make our own cages and candy in a way which we find is good for the two extreme conditions—the heat here in April and cold in the North. Perhaps half of these packages go into Canada and all of them north of the Mason and Dixon line.

Two sticks, one black and one white, turned in various directions constitute a record for each mating-box.

Judging from reports from buyers I feel quite sure the one-pound package from the South, early in the season, is the most

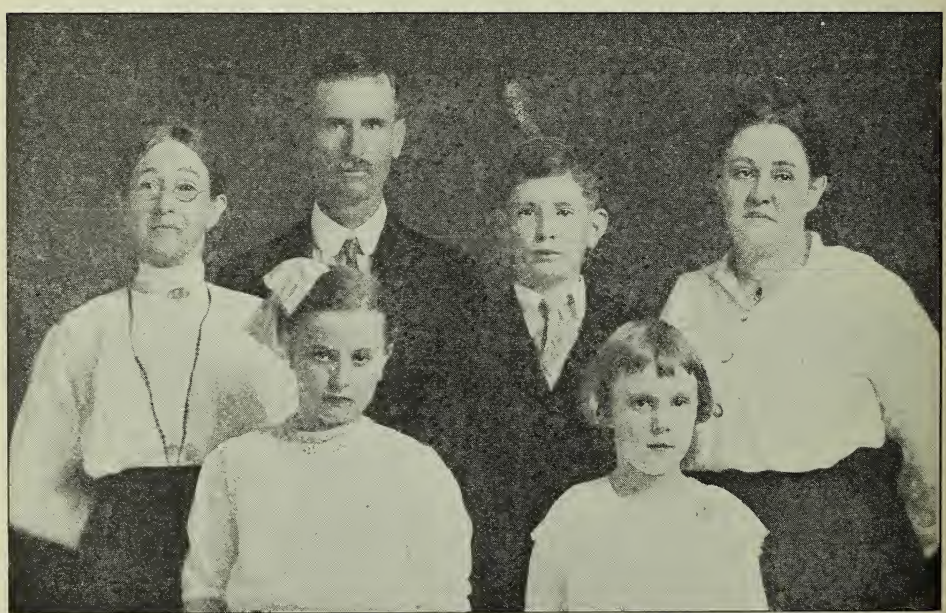
profitable way for the northern honey-producer to get his bees. A one-pound colony purchased early, and put on combs and honey, will probably give him, that season, as much honey as the average colony he has wintered over. You see these one-pound packages consist of young worker bees and a young queen, and consequently they are not subject to spring dwindling.

I predict that soon the honey-producer in the extreme north will sulphur his bees in the autumn, and thereby save honey and combs to run one-pound colonies on early in spring. Of course, he can strengthen his weak colonies in early spring with young bees without queens from the South if he dislikes to kill his bees in autumn. He can also use these early swarms from the South to make increase which will give a good surplus the first year. The express charges are from 20 to 40 cents each, depending on quantity and distance.

In 1901 I shipped bees up river into Georgia in June, this being the beginning of migratory beekeeping on this river. In June, 1907, I shipped 300 colonies of bees to Fitzpatrick, Ala. Finding this a good locality for queen-rearing I offered queens for sale. Since then I find that most of the time I have orders for all we can rear.

We now have seven yards in which are a few more than 700 full-sized colonies for the production of bees and honey. We also run about 600 mating-boxes in the spring—some less the latter part of the season.

A small swarm from a mating-box took up quarters in a pine-tree twelve feet above grounnd. Sealed brood could be seen without molesting the bees.



Yankee mother-in-law, southern husband, Ohio wife, and hybrid children.

Our honey-flow begins about June 10. Our colonies in two-story hives are about ready to swarm the last of March. It is very hard work then to prevent swarming and increase. This, you will notice, is about 70 days before our honey-flow.

Each year I have made enough money to pay my expenses, including those of the family. When I have had short crops I manage to get a higher price per pound than when the crop is large.

In 1899 I went into the bee business exclusively on the Apalachicola River, Florida. Prior to that I was a city man. With a so-called practical men as partner, the first year I lost about $1000. I then bought the other man's interest and found I had about 200 colonies and a lot of empty hives, etc., including a debt of about $220.

Fitzpatrick, Ala.

[A picture of Mr. Achord's pound package appears on page 981, Nov. 1, and his advertisement elsewhere this issue.—ED.]

PANHANDLE BEE-PEOPLE TALK IT OVER

BY JOHN RUDE

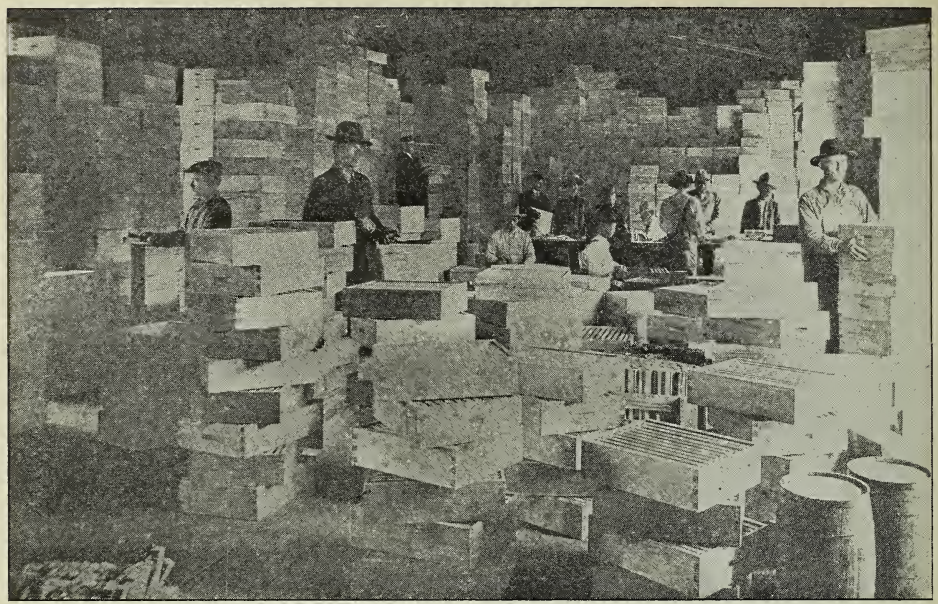
The Panhandle Beekeepers' Association of Southeastern Ohio and Northern West Virginia, held its semi-annual meeting in the shape of a field meet at "The Lindens," the home of L. C. Seabright, vice-president of the association. To say the meeting was a success is putting it very mildly.

The Lindens is a most beautiful place, situated at Blaine, Ohio, five miles west of Wheeling, W. Va., along the National Boulevard, and is reached by electric car. Mr. Seabright's bees are the yellowest and most gentle I ever saw. Forty-five colonies are all in eleven-frame Langstroth hives of his own design and manufacture. The hives are well made, and have been in use for thirty-five years. They are practically a double-walled chaff hive, or, better still, a convertible chaff hive, as the ends are chaff packed, and for winter use there is a chaff division-board inserted on each side, four frames being removed. The hives are kept neatly painted and a grapevine grows beside each hive for shade. A well-equipped honey-house and a few fruit-trees comprise the place where beekeepers like to gather.

Crop reports were very poor, but every one reported plenty of swarming. The meeting was short, as the members preferred to move about among the bees, getting acquainted.

Bellaire, Ohio.

There was not one grouch on the place.



Nailing up supers and shallow frames. See Beekeeping in the Southwest, this issue.

THE OHIO STATE BEEKEEPERS' CONVENTION AT AKRON, NOV. 26, 27

BY E. R. ROOT

While the attendance at this convention was not large (not over fifty being present at any one time), it was a representative one, and the discussions were above the average. In the afternoon of the first day the members were piloted through the B. F. Goodrich establishment, the largest rubber-plant in the world—a plant that has 15,000 employees. All who went through expressed themselves as feeling that this was one of the greatest treats of their lives. To see rubber tires for automobiles and bicycles, rubber coats, rubber shoes, and other rubber specialties made, the thousands of workmen like a well-drilled army was indeed a sight. This immense concern opens its doors to the public, and the public is given an insight as to the possibilities that can be accomplished through a great organization.

The first regular session was in the evening, presided over by Mr. Fred Leininger, president. In his address at the opening he called attention to the fact that we were meeting in one of the greatest states in the Union—a state which contains some of the best beekeepers in the world; a state that has the largest bee-supply manufactory in the country if not in the world; a state that sends out more queens than any other in the Union. While he admitted that the attendance that evening was not as large as that of some meetings in other states, he felt that it represented a large number of colonies of bees. He spoke of the benefits of organization and co-operation; of the importance of getting a better price for our product. The fact that we are not getting better prices he felt was due to the fault of the beekeepers themselves.

He then called on N. E. Shaw, chief inspector of apiaries, Columbus, Ohio, who gave an address on the condition of bee diseases in Ohio. When he first began this work he was somewhat discouraged. Foul brood had taken a tremendous hold, and the task of mitigating its ravages seemed well nigh hopeless; but he was glad to report that many localities that were formerly rotten with the disease were now practically free from it. In many others the disease was becoming less and less prevalent, and it was evident that it would all be cleaned up in the near future.

The report for the year showed a decided gain for the better. About 8000 colonies were inspected last year at an average of 24 cents a colony. This figure, according to Dr. Phillips, who was present, was about normal.

Some discussion followed, after which Dr. Phillips, of the Department of Agriculture, Washington, gave an address on the temperature of the honeybee cluster during winter. He elaborated on the statements he made in bulletin No. 93, a review of which appeared on page 879 of our issue for Nov. 15, 1915.

I will not attempt at this time to give a *résumé,* as the reference given above is much fuller than anything I can give here.

Dr. Phillips was followed by Attorney Melville Hays, of Wilmington, on the subject of bee legislation. Mr. Hays stated that his neighborhood has been having bee diseases ever since a carload of honey was shipped in. To prevent a recurrence of that kind he proposed some advanced legislation. He would require among other things that the consumer burn or disinfect all packages or containers as soon as emptied of honey. He went on to state that when these packages go out on the scrapheap the bees in the vicinity carry honey that is infected to their hives. He would place authority in the hands of the State Board of Agriculture and give it sufficient power to enforce its provisions.

Most of the beekeepers after the adjournment of the session (it was too late that evening to enter into a general discussion) expressed themselves as feeling that it would be impossible to get through such advanced legislation, and they doubted the wisdom of some of it, because the section requiring the burning or disinfection of packages containing honey would convey to the consumer the impression that such honey was full of germs dangerous even to human beings. Many of them felt that, in view of the difficulty of getting such a law on the statute-books, the present law was quite adequate.

In the morning session the next day Mr. F. W. Summerfield, of Toledo, led off on the subject of migratory beekeeping. Mr. S. is a retired merchant who devotes most of his time to the production of honey during the summer in and near Toledo, and during winter on the Apalachicola River, Florida, a few miles above the famous Marchant location. Mr. Summerfield, who has had a wide experience in moving bees back and forth in car lots, spoke of some of the pleasures and penalties in bringing bees back and forth in car lots. So far he had not made a very great success of it, owing to poor seasons; but neither had he made a complete failure of it. He spoke of the difficulties and cost of wintering bees in the North. He eliminated this by moving his bees south, building them up, taking a crop of tupelo honey and bringing them back north in two-story colonies. He shipped all his colonies upside down, thus leaving the heavy part of the frames containing the stores against the top-bars now on the bottom. As the bottom-bars now at the top are narrower it gives the bees more room up for clustering.

Mr. Summerfield estimated the cost of taking the bees down and back again, including his own time, at $2.70 per colony. With ordinary seasons such as are experienced in Apalachicola, and a normal season in Ohio, he felt he could make a good thing of this kind of migratory beekeeping. He doubted very much, though, whether any one could hire some one else to do this and make it pay. In any event, with him he could afford to operate at a loss, as he does not now have to depend on the earnings of the bees to give him a living. The main thing he was after was health and recreation, which he had secured in large doses.

Mr. Summerfield was followed by Mr. F. S. Snook, of the traffic department of the Erie Railroad, Akron, on the subject of shipping honey. Besides being one of the prominent railway men on his line, he is also a beekeeper, and hence he was able to appreciate the problem from the standpoint of the shipper as well as of the carrier. He made it very clear that the policy of his and all railroads, in fact, was to deal fairly with the public; but the public often disregarded the instructions on how to ship commodities, and the average beekeeper was no better. Carelessness in packing has a tendency to advance freight rates. He urged all beekeepers who ship comb honey to ship in carriers of not less than 200 lbs. Smaller shipments, if improperly packed, are very likely to go through in bad order, with the result that a claim would be forthcoming to him for adjustment. There had been comparatively little trouble, he said, from the large shippers of either comb or extracted honey. Most of the claims come from the small producers who have the impression that the railways are soulless corporations that do not care whether the honey is smashed and broken or not. Mr. Snook's address was one that ought to be delivered before the National Beekeepers' Association, and that organization would do well to get a paper from him. It is not often that a railroad man is also a beekeeper.

In the afternoon, Inspector A. C. Ames, of Peninsula, O., in the absence of D. H. Morris, gave a brief report of the exhibit that was made under the auspices of the

Ohio State Beekeepers' Association at the State Fair. He was not able to give definite data, because Mr. Morris, who is now in Cuba, had all the facts and figures.

As a foul-brood inspector he called particular attention to the carelessness of some good beekeepers in the matter of treating foul brood. One man in particular had been melting up his combs in a leaky solar wax-extractor, and wondered why the disease kept spreading through his apiary. Others had been careless in the way they exposed their combs. There was just one thing in the law that he thought ought to be amended, and that was a section that would give the inspector police powers to compel a beekeeper to transfer his bees into movable-frame hives. So far no special difficulty had been experienced; but the time might come when such authority would be required.

Dr. E. F. Phillips closed with an address on outdoor wintering. He read from his bulletin No. 695, "Outdoor Wintering of Bees," a review of which was given on page 876 of our issue for November 1st. Copies of these bulletins were distributed among the members.

The election of officers resulted as follows:

President, Fred Leininger, Delphos; Vice-president, A. C. Ames, Peninsula; Secretary, Dr. Ernest H. Kohn, Clover Hill, O.

THE HOME-BUILT TRACTOR

BY XENO W. PUTNAM

[On account of illness Mr. Putnam was unable to complete promptly his series of three articles on the Home-built Tractor, the second of which appeared in the first September number.]

A 36-inch drive-wheel moves ahead about eleven and one-third feet for each revolution on the axle. Twenty-five revolutions per minute rolls it forward at the rate of something over three miles per hour. This is quite fast enough for ordinary work around an apiary. If an occasional trip to an out-apiary is necessary this speed may be increased either by increasing the size of any driving-pinion or by diminishing that of any gear-wheel which it drives. Under nearly all circumstances, lower rather than higher speed is needed, because the sudden pitching of a tractor over rough places, added to the continuous vibration caused by the engine, is hard enough at best upon both engine and tractor.

Let us assume that the normal speed of our engine-shaft shown at A, Fig. 1, is 600 revolutions per minute. In the process of transferring this motion to the tractor drive-wheels at H, the revolutions must be reduced to twenty-five or less. An 8-inch sprocket wheel on the engine, belted to a 24-inch wheel on the countershaft B, would bring this speed down to 200 revolutions per minute, because the smaller driving-sprocket would have to make three revolutions in order to drive the larger wheel through one of its 24-inch revolutions. Our countershaft at B, then, to which the 24-inch sprocket is securely keyed and all that is secured to it along any portion of its length, revolves 200 times per minute.

Between the two sides of the tractor frame we will mount a small gear-pinion on the countershaft. This meshes with the drive rim of the differential shown at C, which is three times as large as the pinion. For every three revolutions of the counter-

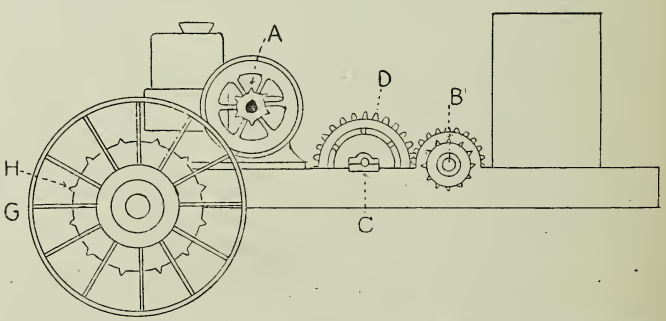


FIG. 1.—A, engine-shaft with 8-inch sprocket; B, counter-shaft with 24-inch sprocket and small gear-pinion at center of shaft; C, differential shaft with differential, D, between tractor-sills, and carrying small sprocket wheels (not shown in cut) at each end for belting to bull-sprocket H on the inside of drive-wheel G. Chain between A and B works just inside the chain from C to H between bull-drive chain and sill.

shaft, or every nine of the engine-shaft, the differential revolves once—that is, about 66 times per minute, providing there is no lost motion through slippage. If the tractor is always to move forward, with no reversing gear, the counter-shaft pinion is keyed securely to the shaft. If we wish to provide

for backing the tractor, a keyway must be cut in the countershaft a little more than twice as long as the thickness of the pinion, and a smooth straight key set in securely, so there will be no play. The cutting may be done at home by means of a quarter-inch drill, the series of holes being carefully sunk in exact line for the required depth, and then dug and dressed out by means of a cold-chisel and small files. Drive the key in snugly its full length and then

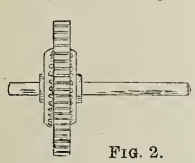


FIG. 2.

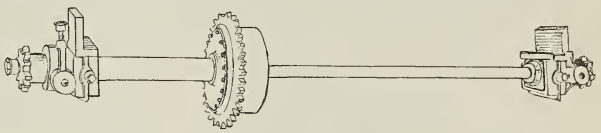


FIG. 3.

slip the pinion upon the shaft with the keyway dressed out to slide easily upon the key but without wabble. To the pinion must be attached a shift-gear collar such as can easily be secured from a mowing-machine or almost anything else with provision for shifting a gear-wheel. Frequently a pinion and collar cast together can be secured.

At each end of the differential shaft we now fit a sprocket-wheel that will work on a chain of the same number required for the bull-sprocket on the main drive-wheel of the tractor described in the last number of this series. Both of these small sprockets must be alike in size, and preferably both should be mates of the large sprockets in the same binders; then there will be no question about everything working properly and in absolute step. For instance, if we get our two drive-wheels out of two old Champion binders, and at the same time secure with each the small sprocket over which the drive-chains worked, we are sure of avoiding possible trouble through some little difference in the pitch of the two wheels. If these sprockets are one-third the size of the bull-sprockets we have our speed divided by three again, and so get the drive-wheel rate of revolution down to 22 per minute, which will be found fast enough. If the difference between this last pair of wheels is greater or less than three to one, we must vary one of the other pairs of gears a little to suit the occasion, unless we are able to change the speed of the engine or remodel our own ideals as to speed. In making any variations it should always be remembered that it is better to increase the size of the driven wheel rather than to decrease that of the driving pinion, because there is more tendency to cramp and bind in the smaller diameters of wheels. This rule holds good alike with gear and sprocket wheels, and, for heavy duty, the wheel that gets below twelve to fifteen teeth must be considered in the light of a necessary evil which should be avoided as much as can be without too greatly increasing the size of the larger wheels.

By connecting the sprocket-wheel on the engine with the countershaft by a chain, and attaching the two sprocket-wheels on the differential shaft to the two drive-wheels of the tractor in the same manner, we now have in Fig. 1 a tractor that would move forward in a straight line whenever the engine is running. To crank the engine, however, we would have to move the entire tractor, while there could be no gradual picking up by the engine of the load and no variation of speed. It would be almost impossible, too, to change direction, because both of the tractor drive-wheels would be driven forward directly from the engine at equal speed. We could not turn a corner without sliding the wheels, and would find the tractor very hard to handle on rough ground.

The differential permits one of the drive-wheels to turn faster than the other, and one of some sort should by all means be used. One from a worn-out steam-tractor is occasionally available at junk prices, though generally the differential is pretty well worn out by the time the rest of the rig is useless; also it is pretty heavy for a light tractor. At a very small cost an automobile differential of some sort can generally be obtained of any garage or second-hand automobile shop, though often these are pretty well worn. They answer quite well, when in fair repair, for a tractor up to about ten-horse power. The entire shaft should be purchased together, and mounted in the place shown for the differential shaft, and then cut to length. Probably a sprocket-wheel will have to be substituted for the gear-pinion on the counter-shaft, and a chain-drive be used between the latter and the differential.

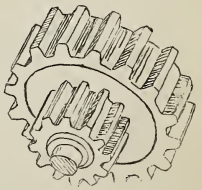


FIG. 4.—This double-gear wheel turns upon its shaft, which need not turn. The relative speed of the forward and reverse motion of the tractor depends upon the relative size of the two members.

There is a complete and very fine differential set on the market which may be purchased new for about $18. Very small tractors made with mowing-machine drive-wheels may be provided with a fairly good differential by retaining the compensating gearing in the case about the hubs and reversing the wheels. The differential problem can also be gotten around by building a three-wheel tractor, with but one wheel behind, and that the drive-wheel. One good heavy binder-wheel gives a pretty good ground grip that will take a light tractor over most places about an apiary.

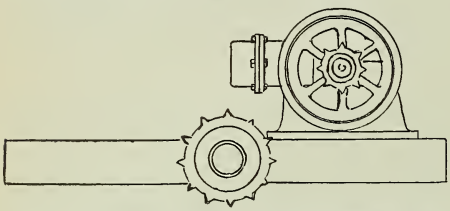


FIG. 5.—One of the two sprocket-wheels here shown should be replaced by a clutch-pulley, and the sprocket attached to the loose member of the pulley.

A regular tractor differential with gear-drive rim is shown at Fig. 2 and a sprocket drive differential at Fig. 3. The ends of the shaft upon which this is mounted project beyond the frame into line with the bull-sprocket wheel, and the small sprocket at the one end is keyed to the shaft and on the other to the sleeve which is a part of one bevel-gear wheel in the differential, and which runs loosely upon the shaft. Small tractors are sometimes built with drive-chain to but one of the bull-wheels. Then no differential is needed as the free wheel can do all the work of adjustment in turning. On rough ground, even though one gets into difficulty, if the one driving-wheel happens to drop into a hole, or where there is poor footing, its mate is not harnessed up to help it out. The single drive-wheel, too, unless placed in the center, puts a constant diagonal strain upon the whole tractor.

The reversing gear is simple—just a double gear-wheel shown in Fig. 4, and mounted loosely upon a shaft under the countershaft pinion with which its larger member meshes when the sliding pinion of the countershaft is slid to one side out of mesh with the differential drive. The small member of the double gear is constantly in mesh with the under side of the differential drive. When the countershaft drive-pinion is also in mesh with the differential it is out of mesh with the reverse gear, and the latter runs as an idler, receiving its motion from the differential through its small member. The differential then is running in the direction opposite from the countershaft, and the reverse gear turns in the opposite direction from the differential or the same direction as the countershaft pinion, which it does not touch. All meshing gear-wheels, it is to be remembered, run in directions opposite from each other. When the counter-shaft pinion is slid out of mesh with the differential, and into mesh with the larger member of the reverse gear, the latter is driven by it in the direction opposite from that of the pinion, and, in turn, through its smaller member, drives the differential in the direction opposite from itself or in the same direction as the countershaft. This reverses the direction of the tractor.

If there is a clutch-pulley on the engine, no other will be needed on the tractor, the drive-sprocket of the engine-shaft being secured to the loose member of the pulley. Then the clutch can be thrown out and the engine started in the usual manner; and, after it is running, the clutch can be gradually thrown in. Without a clutch on the engine one must be placed upon the countershaft, where the large sprocket is shown in Fig. 5, and the sprocket attached to the loose member of the clutch. A very good light clutch-pulley can be purchased for $10; or, if one does not wish to go to that expense, a belt drive can be substituted for the chain drive between engine and countershaft; then by means of a loose belt and tightener the load can be thrown off and picked up very nicely. This drive is not as sure in wet weather nor on bad roads nor under a heavy pull. Sometimes one avoids a breakdown by the hitch between load and engine not being too unyielding.

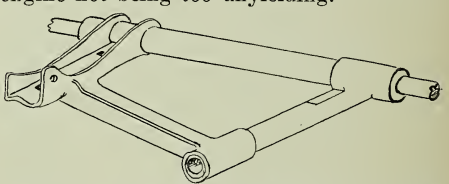


FIG. 6.—By using the old bolt-holes and bracing to frame of casting, an absolutely true and rigid set of bearings can be obtained.

The shafting for this tractor may all be found in old binders and mowers, as good as new. Nearly always the main shaft is 1½ inches. Where possible to accommodate the gearing to it, by all means retain the cast boxings and frame, or as much of them as is necessary to secure a good unyielding anchorage for the shafts. A frame such as shows at Fig. 6 may require a little more room but will not get out of alignment, and is easily secured to the tractor frame by means of the bolt-holes and the irregularities of form against which bracing can be

fitted. Some of this casting might be cut away with a hack-saw or file so as to accommodate the gear pinion and the long keyway without destroying the opportunities for fastening it to the frame. Often the success of the tractor depends quite as much upon correct alignment and perfect rigidity as on the selection of the parts and their general arrangement.

This completes the running members of the tractor, and leaves for another paper such conveniences as the steering gear, engine control, and a variety of necessary trimmings, together with a few words regarding some of the more useful special attachments needed upon the ideal tractor for the apiary.

Harmonsburg, Pa.

AN OFF YEAR IN CUBA

BY FRANK REIMANN

Conditions for several years have been unfavorable. Perhaps this accounts for no articles from Cuba. In the United States a real good crop is expected only once in twenty years. In Cuba it is about once in five years. For instance, 1500 hives of bees in an extra year will make 400 barrels of 50 gallons each. In a poor year they would make from 100 to 200 barrels a year. The smallest crop I had in ten years was 100 barrels. The cause of the poor years may be a dry summer or cold winter, or both. The last week of October and November were so cold that the bees made very little honey.

This summer where I had the majority of the beeyards it was very dry, only about five inches of rain fell. Sixty inches is not an extraordinary rainfall for Cuba for a year. I have only one beeyard that was in condition to make a full crop, and this will not be over three-fourths now, on account of the great drouth and cold.

Owing to the low price of extracted honey on account of the war, last winter I purchased 10,000 sections in the United States to raise comb honey this year. By this time I have been working in 250 supers, and I think these sections will be all completed by Christmas. Our main crop, campanilla, is now on. I am using three beeyards to fill these sections, whereas in a good season one yard would have filled them.

The strained honey has now advanced to 35 cts. a gallon, which is considered good business for Cuba. Our honey business in Cuba is almost entirely with Germany. Four years ago we had a very large crop with high prices. This induced quite a large number of natives to go into the business. Now with three bad years they all want to sell out, and I buy these bees at my own price. Their bees are near the mountain near Yara, where I shall be located in the future. My business between Cauto and Guamo I expect to sell or rent.

There is help in abundance here. In the honey season we extract one beeyard a day. I have one man to take the honey from the hives, one to take the honey into the house and bring the empty combs back; two women to uncap, one man at the extractor, one woman to cut out the drone or old combs, and one man to put the combs back in the hives. In this way we can extract a barrel an hour.

The beeyards have between 200 and 300 hives. I find that 300 hives should be the limit in one yard here. I pay the men $1.25 a day, and the women 50 cents.

The honey business is in a decline in Cuba. As a beekeeper makes his money from bees he finds other opportunities that will pay more money. For instance, in the cattle business a beekeeper can buy a cow here for $25 to $30. In a year he can raise a male calf which will bring $20, and a female will bring $15. In a few years we can have a very substantial way to make a living. I know various beekeepers who began here about fifteen years ago have now large cattle-ranches all paid for. Sugar-cane is getting the best of the beekeeper. Wherever a new sugar-mill is started the beekeeper must move on, as our principal source of honey is the woods.

A person intending to locate in a foreign country should pass some time with an expert beekeeper, because climates are different, and from the natives it is impossible to learn.

We have honey here all winter; but in the summer we have our bad seasons, and at the same time these bad months may give a surplus of honey. One beeyard gave twenty-two barrels last summer, and this summer he has made only two barrels.

I kept bees in different parts of the United States for twenty years, and had only two good seasons. Surely there is no year here when one could not make a good living in the bee business in a good locality.

Cauto el Paso, Cuba.

Heads of Grain from Different Fields

The Backlot Buzzer

BY J. H. DONAHEY

It's a good thing she's a bee or the mother queen would lose her patience taking care of her flock when they are all tucked in for the winter. Remember how you used to yell, "Mother, make these kids behave; they've got all the covers"?

Did They Stop Laying for Want of Pollen?

Having ten years' experience in handling bees I have never experienced a scarcity of pollen at this time of the year. I have noticed for the last six weeks or more that my queens—all young ones—stopped laying. I also tried to force them by feeding, and that had no effect. It was only last week that I came to a decision on the pollen question.

I should like to have you tell me the reason the queens stopped laying if other than that there was no pollen in the hives, and also how to save them till spring, as I do not care about losing a single queen. All are of good stock, there being sixteen in all. I had thought of packing all in large single-row tenement hives with six inches of leaves or shavings around the outside of the hives, and filling one comb solid with rye flour and putting it to one side of the cluster to form a division-board.

Philadelphia, Pa. SAMUEL K. JOHNSON.

[As a general proposition, all queens will stop laying, whether young or old, by about the first or middle of October. Old queens will stop laying shortly after the harvest in most of the northern localities. Much will depend upon whether there is a fall flow from asters or other sources. If honey comes in from natural sources queens will start laying and will keep it up until about the 15th of October, or about the time that cool nights begin to come on. Young queens—that is, queens 30 or 60 days old, will lay very much better than old ones. Perhaps your trouble was because you began feeding too late. If the nights are cool, queens don't lay much—pollen or no pollen.

In the case you have here cited, it is not altogether clear that a lack of pollen was the reason for the queens failing to lay. As a general thing there will be a little pollen in some of the combs in the hive; and if the bees are given stimulative feeding, if no honey is coming in from natural sources, queens will usually start laying, providing they are young enough. Old queens may not lay, even if they are fed, at that time of the year.

Your scheme of packing in long rows is good; but if your colonies are not strong you will have to unite until they are. This may mean the sacrifice of some queens.

We do not know of any way of giving artificial pollen in the combs that will give any satisfactory results.—ED.]

Devil's Paint-brush, or Orange Hawkweed

I should like to find out about a weed we have here. It is an annual, and is known as "Devil's paint-brush," or orange hawkweed. The pastures, old meadows, and roadsides are red with it the last two weeks in June, and the bees seem to like it better than clover. The pollen is a dark-orange color, and the honey water-white and quite heavy and thick. I have been unable to find a single fact about the weed. Can you give me any information?

Laurens, N. Y. C. L. WILLIAMS.

[We referred this inquiry to Mr. John H. Lovell, who replies as follows.—ED.]

Orange hawkweed, "Devil's paint-brush," or "Grim the collier," was introduced into this country from Europe some fifteen or twenty years ago. The botanical name is *Hieracium aurantiacum* L. It is a pernicious weed, rapidly spreading in sandy soil, and driving out the pasture grasses; but the flowers are showy, and it is sometimes, I believe, cultivated for ornament. I have it growing in my grounds, and it occurs wild in the fields, but is not well adapted to our heavy clay soil. Bees visit it to some extent—chiefly, I think, for pollen, and I regard it as of little value as a honey-plant. It may yield nectar more freely, possibly, in New York, but I am inclined to believe that Mr. Williams is mistaken in thinking he obtained a considerable quantity of water-white honey from this source.

Waldoboro, Me. JOHN H. LOVELL.

Concerning the Net-weight Law

I should like to ask you some questions concerning the net-weight law. Is it necessary to stamp the net weight and label each ½ lb. (6½ oz.) tumbler of extracted honey, or stamp the net weight or label each ½-lb. tumbler when shipped to Ohio, or just stamp the net weight, or label each case or barrel of them as the case may be?

Brooksville, Ky. ADAM KALB.

[It will be necessary to mark the net weight on each half-pound package of honey. Marking the net weight on each case or barrel would not answer the requirements of the federal law. If each package of honey weighs 6½ ounces it will not be proper to mark it one-half pound. If the honey weighs only 5 ounces, for example, it will have to be marked 5 ounces; but it would not be permissible for you to mark a package 17 ounces, because that would be contrary to the ruling. You would have to mark it 1 lb. and 1 oz. Any thing that weighs under one pound should be marked in terms of ounces.—ED.]

Spreading Brood

For years I have followed with excellent results the advice of Doolittle on spreading brood. My rule is never to spread a brood-nest till I have four combs of brood. Why? Because there are not enough bees to cover extra brood space. I never shift the pollen combs, for they are as important to the welfare of the colony as the honey. My arrangement is as follows:

Pollen
Brood
Brood
Old comb filled with honey
Brood
Brood
Pollen

P. C. Chadwick, page 883, November 1, quoting Mr. Doolittle, who says, page 750, September 15, "Any comb that is to be put between combs of brood should be full of honey, and that honey preferably sealed, adds that he would thank no one for retarding the work of his queen in any such manner. He says spreading brood should never be done unless conditions are such as to induce the queen to fill an inserted comb in 24 to 48 hours.

Mr. Chadwick's comment is misleading. Doolittle does not mean the honey is to be sealed when inserted in the hive. What he undoubtedly means is a well-ripened comb of honey, for he says further on, "The cappings to the cells should be broken by passing a knife flatwise over them before the comb is inserted between the frames of brood."

What happens when an *old* comb of bruised honey is given to a colony of four combs of brood and two of honey? The bees at once set to work to clean up the bruised honey; and in moving the honey the queen is offered more food, with the result of more eggs. Meanwhile the bees have been busy polishing and cleaning the center frame, leaving an arc of honey ideal to the bees for an early brood-nest. The old comb with its numerous layers of cocoons is warmer than a thin new comb, and retains the animal heat—vital to the interests of the brood-nest at this time of the year. The four combs of brood are daily giving more nurse bees necessary to take care of the increase of eggs, etc., and, as Doolittle says, there is undoubtedly a gain in time, but unless we want this gain in time it may prove better to see to it in autumn that there are "millions of honey at our house," and leave the rest to the bees. JOSEPH GRAY.

A Simple Four-colony Winter Case

Here is a description of a winter case which Irvin Ware, of Chesaning, Michigan, a partner of mine in the bee business, built for our bees. I helped to pack them before I came up here this fall.

First he makes a bottom-board about eight inches longer than the length of the hive, and then makes sides and ends about four inches higher. These are all put together with clamps. This gives four inches room for packing on both sides and ends, and over the top.

There is an alighting-board six or eight inches wide. Slats half an inch thick are nailed on the bottom-board, and the hive rests on these. A four-inch board laid flat on these slats at the front of the hive holds up the packing material and permits the bees to pass in and out.

When the hives were all packed, and the cases clamped together, we covered them with tar paper. With this kind of winter case we can leave them packed just as long as we wish in the spring, as they rest on these stands winter and summer, the bottom-boards resting on blocks and stones.

These colonies winter facing eastward, on the east side of ten acres of a thick wood. There is a little rise in the land just east of the bees that protects them from the east winds, and the wood protects them from the west. I have never noticed much trouble from the bees drifting.

Aitkin, Minn. WILLIAM CRAIG.

The Net-weight Law and Its Application

Have you a copy of the net-weight law of New Jersey? If not, where can I get it? The groceries here are selling honey without being stamped. I have told them it will have to be stamped, and they say, "No, we don't sell it by the pound. We sell it by the box." Now, have they a right to sell it that way? Whom can I write to, to stop it?

Monroe, N. J. JOHN K. KIMBLE.

[Unless your own state has a net-weight law of its own, independent of the federal law, the grocer is not compelled to mark the net weight on the section, neither is any local beekeeper. But any grocer or beekeeper, or any one else, in fact, who attempts to send a shipment of comb honey into another state must mark every section with the minimum net weight on the section itself.—ED.]

Onion Juice a Remedy for Bee-stings

I am curious to know whether anybody besides our family and friend have ever tried onion juice as a remedy for stings. Our experience has been this—that if the sting is immediately and carefully removed, and if a slice of raw onion is gently pressed and worked over the punctured skin, all pain ceases in about ten minutes, and little or no swelling follows. The relief is immediate.

If a small piece of ice is put on the slice of onion, and the whole bound to the affected part with a strip of cloth, the effect is even better; but ordinarily a drop or two of fresh juice squeezed from the onion slice will do the business with me, if the application is immediate. I am curious to know what others have to say about this cure for a bee-sting. The whole credit for the cure belongs to my wife. J. ROWE WEBSTER.

Lexington, Mass.

[Any cooling application, whether it be snow, ice, mud, a wet rag, or slice of an onion, would tend to relieve the pain from a sting. The pain will usually be gone in ten minutes any way. We doubt if there is any virtue in the juice of an onion itself. As a general thing the puncture made by a sting is so very minute that it is entirely closed when a slight swelling takes place. It is practically impossible to get any remedial agent into the wound itself unless it be opened with the point of a lance or knife.—ED.]

Borax Exterminates Roaches

When I took charge of the Kanawha County Infirmary the kitchen, dining-room, toilet-rooms, and the whole building, as well as the superintendent's residence, was creeping with roaches. I took powdered borax, sprinkled it along the steam-pipes, around the sinks and commodes, from the basement to attic. In two weeks not a roach was to be found, either dead or alive, and they have not returned to this date. The roaches had been in the buildings for ten years.

Institute, W. Va. M. K. MALCOLM.

Hornets Puncture the Grapes and the Bees Suck the Juices

Referring to the editorial in the November 15th issue, I have been watching this matter very closely, and find that hornets, wasps, and yellow-jackets often puncture the grapes, and then the bees get busy on the damaged fruit. If I were on a jury I would say that bees are not guilty, for they are harmless so far as sound fruit is concerned.

Cabot, Pa. W. F. EBERT.

A. I. Root

OUR HOMES

Editor

THE WAR, AND ITS EFFECTS ON INTEMPERANCE.

The sermon below was preached by Rev. H. S. Fritsch, for his congregation here in Medina, on Sunday evening, Oct. 10. Of course I was present, and, on account of my deafness, I sat close to the speaker. You may be sure I gave two or three hearty amens. As you go along you can imagine, each of you individually, where my amens occurred.

May God help us to learn speedily the lesson he is striving to teach us, and that peace and good will may take the place of death and devastation.

SOME LESSONS THAT THE EUROPEAN WAR IS TEACHING THE WORLD.

Surely the wrath of man shall praise thee.—PSALM 72:10.

The most significant event of modern times is the war now being waged in Europe. It is the duty of the Christian pulpit to interpret the movements and happenings of the day in their relation to the Christian religion.

In our boyhood days, when we were guilty of some particular piece of folly our elders used to philosophize for us and say, "Let it be a lesson to you!" If we climbed up on the woodshed in order from that lofty height to survey the wide expanse of the world, and lost our equilibrium, and rolled gracefully and disgracefully down the shed's sloping roof, landing upon the woodpile below with various and sundry bumps and bruises, our elders would say, "Now let this be a lesson to you!" If we banqueted in the shade of the old apple-tree, following the example of our illustrious first forefather who tasted the forbidden fruit, and then came into the presence of our elders contorted out of all semblance of boyish shape, imploring for a copious draught of Dr. Perry Davis' Pain Killer, we were told, "Now let this be a lesson to you!" If within our breast we felt surging and seething an impulse to devote ourselves to the great cause of humanity, and, following our Napoleonic and Alexandrian impulses for conquest we sallied and sailed forth to reduce the barbarians to civilization, and returned to our parental home with blackened eye and gory nose, we were told, "Now let this be a lesson to you!"

Nations, like boys, learn by experience. Nations, like boys, too, perpetrate their follies. The perpetration of a folly is not so reprehensible; it is the perpetuation of a folly that is criminal and suicidal. Nations, like boys, decline and degenerate when they do not permit their follies to teach them salubrious lessons. Nations, like boys, progress and advance when they do permit their follies to become lessons.

To every unprejudiced mind the European War appears a colossal and consummate piece of folly. Never before in the history of the world have the nations raged and the kings of the earth set themselves in battle array without knowing what they were raging over or why they are setting themselves in array! Were it not so tragic, one might say, as the Yiddishers do. "It is to laugh!" "He that sitteth in the heavens shall laugh!" A colossal, a consummate human folly is this modern war! The nations climbed the woodshed of arrogant materialism, and have tumbled disgracefully down! They gorged themselves with the forbidden fruit of land and sea grabbing, and have become contorted by painful convulsions! They adopted political programs of militarisms and navalism, and have become bruised and broken and battered and beaten at their own game! Folly of follies! And over against the war-racked and war-wrecked nations stands parental Christian Civilization and says, "Now let this be a lesson to you!"

What the ultimate and supreme lesson of this war will be, we have no way of knowing until it has been fought out to the bitter end. But there are already several lessons which stand out, and it is these of which I wish to speak tonight.

I. I think that, above everything, the present war is teaching the world the lesson of *the folly of intemperance*. Today in practically all of the great belligerent countries is a literal fulfilment of the prophecy of Joël, chapter 1, verses 5 and 6:

> Awake, ye drunkards, and weep; and wail, all ye drinkers of wine, because of the sweet wine; for it is cut off from your mouth. For a nation is come up upon my land, strong, and without number; his teeth are the teeth of a lion, and he hath the jaw-teeth of a lioness.

"Not Germany," recently said a great English statesman, "not Germany, but alcohol, is England's greatest enemy." Russia put the ban on vodka. The kaiser of Germany took his stand against lager beer, and all of the other belligerent nations to a greater or lesser degree are following the footsteps of these three illustrious examples.

It has been brought home to the world with a terrific and tremendous emphasis that intemperance is a threefold liability to a nation at war.

1. Intemperance is a *physical liability*.

The time was when athletes believed that alcohol constituted a physical asset. The prize-fighter took a number of drinks before he entered the ring, because he believed that the stimulant would increase his chances for success. The baseball player believed that whisky was a faithful ally in the winning of the game. In races, whether by foot or boat or bicycle, it was believed that a couple of drinks increased the chances for success. But the athletic world has learned its folly, and alcohol is taboo.

So, also, it used to be thought that alcohol was an asset in war. Perhaps this was true to some extent in the old *régime*. It may have been in the day when men fought shoulder to shoulder with sword or bayonet, that whisky created a certain frenzy of abandonment which may have had its value. But today warfare is largely conducted by machinery, and requires skill and precision. The man who operates the modern engines of war needs clearness of mind and accuracy of eye and steadiness of muscle; and it has been discovered that alcohol is tremendously treacherous in these respects.

The talk of our nation today is military preparedness. I shall have something to say concerning this a little later, but just here beg to say that I fear our statesmen are beginning wrong end to. The very best move that our nation could make in the way of national preparedness would be to close up every saloon in the country!

2. Alcohol has proven to be a *financial liability* in war.

War costs money. It is a drain upon the property and prosperity of the people. Intemperance produces poverty. An impoverished nation finds it hard to secure credit. "The nation that is drunken shall come to poverty," and a poverty-stricken nation stands no show in warfare.

3. Intemperance is an *economic* liability in war.

Let me illustrate what I mean by citing Germany and England as examples. Both of these nations have far more people upon their soil than the prod-

ucts of their soil will feed. Therefore they must depend for their existence upon the importation of foodstuffs. England knows that this is true of Germany, therefore England established a blockade around Germany to keep foodstuffs from reaching her enemy. Germany knows that this is true of England, therefore Germany conducts a submarine warfare of destruction against vessels carrying foodstuffs to England. This makes it necessary that every ounce of grain raised in both countries be carefully conserved. Now, in spite of the alluring advertisements of brewers and distillers, the food value of beer and whisky might just as well be burned or buried. In order to protect themselves from sheer starvation, it is becoming necessary for the belligerent nation to prohibit the destruction of grain by forbidding or limiting the manufacture of alcoholic liquors.

So intemperance is proving itself a terrible liability in warfare. It makes the soldier incompetent and inefficient, it impoverishes the people so that they cannot bear the financial strain of the war tax, it destroys the products of the soil so that the people are in danger of starvation. No wonder that the great belligerent nations of Europe have latterly become ardent prohibitionists! God grant that America may learn the lesson before it has to be beaten into her with the sword!

II. The war is also teaching the world *the folly of armaments.* The world is learning the truth of the statement long ago made in the 33d Psalm, verses 16 and 17:

There is no king saved by the multitude of a host: a mighty man is not delivered by great strength. A horse is a vain thing for safety; neither doth he deliver any by his great power.

A horse is a vain thing for safety, so is a trench, so is a Krupp gun, so is a battleship, so is a zeppelin.

It is not in the province of the pulpit to take one side or the other in the present discussion of preparedness in our country. That is rather a political question, and must be fought out by the politicians. It behooves every American, however, to consider how much of the present agitation is jingoism and how much of it is inspired by the big interests who have guns and uniforms and battlehips for sale. But there is a deep philosophy of this whole question of preparedness which is truly in the province of the pulpit, and it is the philosophy of the text that I have just quoted:

There is no king saved by the multitude of a host: a mighty man is not delivered by great strength. A horse is a vain thing for safety, neither doth he deliver any by his great power.

Why is a horse a vain thing for safety? Simply because the other fellow will get a horse too, and then you will have to get two horses; then he will get two; then you'll get three horses; and he'll get three also. Then you will get a chariot to hitch to your horses; and he will hitch his horses to chariots. You will build a battleship, then the enemy builds a battleship just a little bigger than yours. Then you must throw your battleship upon the scrap-heap and build one bigger than his. Then he will throw his battleship upon the junk-pile and build one bigger than yours. Verily, a battleship is a vain thing for safety.

Why is no king saved by the multitude of a host? Because the other king will also get a bigger multitude of a host, then the first king must draft more men into service; and the second king, discovering that his host is now comparatively a handful, drafts still more men into service. And thus the process goes on and on.

The present European War is surely going to teach the world the lesson that every armament is a vain thing for safety.

Universal disarmament is coming, not by the efforts of those who do not believe in war, but by the machinations and manipulations and maneuvering of the warriors. "Surely thou makest the wrath of man to praise thee," and disarmament is coming by the very efforts of those who advocate armament!

This is the way the process will work itself out: Battleship after battleship must be thrown upon the scrap-heap as each nation in turn builds a bigger or more effective ship; cannon after cannon must be consigned to the junk-pile as each nation designs a more effective instrument of slaughter. The process will go on draining the treasury of the nation and emptying the purses of the people until there will be no men left to cultivate the fields and do the nation's work, and in sheer self-defense the nation will have to send its soldiers home.

But this disarmament will not take place next week, nor yet next year. For some time to come, at least, the nations now engaged in warfare will manufacture more and more armaments and draft more and more men into service. Inevitably the neutral nations will feel, in self-defense, that they must do likewise, and doubtless this is the part of wisdom. If a bunch of hoodlums were clubbing each other on the street, the innocent by-stander would be foolish not to supply himself with a club for self-defense should the hoodlums attack him—though perhaps he ought not be an innocent by-stander. He'd better be a by-walker and leave the hoodlums to club it out among themselves. But it would be folly for America not to make some provision for self-defense should the maniacs across the waters get after us. So it will inevitably come about that there will be an increase of militarism, not only in America but in all the neutral nations of the world. But all this will be but transient and temporary. When the war is over, and the tumult and the shouting shall have died, and the hatred and the heat shall have cooled, then the nations will settle down and calmly consider the whole matter, and it will inevitably follow that there will result international disarmament, because the nations will have learned by bitter experience the truth, long ago spoken by divine inspiration, that armaments are vain for safety.

III. Of chief importance, however, is the third lesson that will surely be learned, the lesson of *the folly of theoretical religion.*

This war has been called the "collapse of Christianity." It is not the collapse of Christianity, but it is the collapse of a false Christianity. It is not the collapse of the Christianity that Jesus taught, but it is the collapse of the Christianity that the church has taught.

It is a significant fact that in all of the belligerent countries the progress of the war has been marked by great religious revivals. Superficial observers clap their hands at this and say, "Behold, there is at least some good coming out of this war. Behold the revivals that are taking place." But before they clap their hands too vigorously it might be well to investigate just what is being revived. In Germany there is a great revival of prayer. So far so good! But what is the burden of the prayer? "*Gott strafe England!*" "God punish England! God punish England!" In England there is a great revival of religion, and the squabbles which have disturbed the theological circles over there are quite forgotten in the unity of consecration; but, alas! it is a consecration to hatred! There is a revival of religion in the belligerent countries, to be sure, but it is not the revival of the religion of Jesus Christ, but of Joshua; not of Calvary, but of Canaan!

This revival of traditional religion is as inevitable as the revival of armamentation which we have just noted. But when the frenzy of hatred is cooled down, and the Christians of the various countries come together again in council, they will begin to ask themselves, "Why was it that our Christianity did not have power enough to keep us from fighting each other?" And, as surely as there is a God in

heaven, the answer will be that it was because our Christianity was not Christian!

The simple religion of Jesus Christ has been perverted into a system of theology. Forms and formulas, rites and rituals, creeds and confessions, organs and organizations, signs and sacraments, have been substituted by the church in place of the simple ethical philosophy of the Sermon on the Mount. The accepted orthodox Christianity of the day could not and would not prevent the European War; but the Christianity of the Sermon on the Mount, epitomized in the Golden Rule, could have and would have prevented the war. And surely in those calm days which are coming after the conflict, there will be a revival of real religion. Forms and formulas, rites and rituals, creeds and confessions, organs and organizations, signs and sacraments will be thrown on the scrap-heap, and the Golden Rule of Christ will be placed upon the moral throne of the world! Already here and there above the shouting and the tumult there is heard the voice of the prophet speaking in the language of ancient Micah:

Wherewith shall I come before Jehovah, and bow myself before the high God? Shall I come before him with burnt-offerings, with calves a year old? Will Jehovah be pleased with thousands of rams, or with ten thousands of rivers of oil? Shall I give my first-born for my transgressions, the fruit of my body for the sin of my soul? He hath showed thee, O man, what is good; and what doth Jehovah require of thee, but to do justly, and to love kindness, and to walk humbly with thy God?

O foolish Christian church! let it be a lesson to you! Your traditional orthodoxy has been weighed in the balances and found wanting! Shamefully powerless have your creeds and confessions proven themselves in this world woe! Away with your impotent theoretical theology, and enthrone the potent teaching of the Master:

Whatsoever ye would that men should do unto you, do ye even so unto them.

Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind, and thy neighbor as thyself.

CAN A CHRISTIAN WITH A CLEAR CONSCIENCE GO TO WAR?

The letter below is from an old and valued friend. As you will notice by the date, it came some time ago. Read it and ponder over it as I have done.

Dear Friend:—This is from the father of Wesley Foster, who used to read with delight and profit the old *American Bee Journal* and Novice's articles. Pardon me if I suggest a few thoughts that seem important at the present time. The worldwide war still rages, and Christians of all these nations have no clear and effectual protest or explanation, nor any remedy to offer. For nearly 50 years I have been led to think the gospel remedy is not in itself at fault. We have all adopted the sentiments of the sermon on the mount; but in our practice we have set it at naught—made its vital force void by our traditions of patriotism—our law-and-order ideas and our military sentiments. We have vainly supposed that men would, by and by, put up the sword; but to-day scarcely a man in a million dare confess his belief in a gospel that forbids war. There is *no conscience* regarding the taking of human life in war. We hear no testimonies to-day like those of early Christians who declared, "I am a Christian; I cannot fight. I cannot fight, even if I die."

I can think of no stand that we could take to-day which would be more pleasing to God and our Savior than a calm, persistent refusal to take any part in the bloody conflict now raging. Such counsel may appear foolish, coming from a grandpa who is too old to be in the ranks. But why should our extreme age exempt us? We have lived long; our race is nearly run; our lifework is about finished. The world can better spare us than the young men with growing families. Surely it is wrong for any nation to call such citizens to the ranks of slaughter. God never intended to bless such a murderous sacrifice. Surely a young man may claim a right to fulfill his mission by building a home and leaving a goodly number of his little ones to bless the world. Don't tell me we are to obey rulers when they call to arms. Rather let us say in faith, "Whether we ought to obey God or men, judge ye." See Acts 4: 19. For nearly 2000 years we have tried profession without practice; but now it is up to us to practice what we profess, and give God a chance to work miracles by protecting his own, even those who are willing and obedient. Some of our heroic missionaries take their lives in their hands and work wonders until the merchant ships land their traders, backed by warships, and military ideas creep in and sow seeds of distrust, and the pure gospel of peace becomes tarnished.

What of the cross of Jesus? Even when the mob crowded about him he could have called for legions of protecting angels for himself and his cause (this last more dear to him than life); but he chose rather what we to-day cannot fully understand—that the weapons of our warfare are not carnal but spiritual.

You and I should have some timely counsel to offer our children, even true words—"wisdom from above," the kind that is "first pure, then peaceable." Has not the experience of years shown us the value of the gospel in all the lesser evils? and are we not called upon to declare our belief that, when rightly applied to this age-old wounds of the nations it will cure that also? We shall not see the triumph of Christ until his followers cease their present-day hypocrisy. We must, regardless of what others do, live, practice, and teach what Jesus taught, and was willing to lay down his life for. Martyrs of that sort are not many, but are notably such as do not die fighting with the weapons of war in their hands.

Twin Falls, Ida., Nov. 28. A. F. FOSTER.

After reading the above I feel strongly inclined to stand by our good brother and say, "I cannot consent to raise my hand against my fellow-man," or declare, "I am a Christian. I cannot fight, even if I die." But when I consider further, how about defending the home, the wife, and the children? I have before asked the question if we should knowingly let counterfeiters ply their trade; and the same with pickpockets, highway robbers, and the midnight assassin? After every earthquake or flood there are in every city those who would plunder, rob, and steal. Shall we stand idly by where the officers of the law and policemen are nearly overcome while doing their best to restrain a mob? I leave our readers to judge; and may God in his great mercy guide us in the straight path, even if this war *should* come clear over into our own country.

HIGH-PRESSURE GARDENING

SWEET CLOVER—SOMETHING AUTHORITATIVE BECAUSE IT COMES FROM THE DEPARTMENT OF AGRICULTURE.

In the *Weekly News Letter* from the Department of Agriculture for Sept. 15 we find an article on sweet clover, which, even though it be lengthy, answers so many questions that keep coming we have decided to give it entire; and I would advise our readers who are interested in experimenting with sweet clover to keep it handy where they can refer to it. Every statement made is in accordance with our own experience.

SWEET CLOVER; COMMON IN MANY PARTS OF THE COUNTRY; GAINING IN FAVOR AS A CULTIVATED CROP.

Sweet clover, which is so common along roadsides and in waste places in many parts of the country, is rapidly gaining in favor as a cultivated crop. This is due to its value for soil improvement, for pastures, and for hay. There are three species of sweet clover commonly found in the United States. The biennial yellow-flowered species (*Melilotus officinalis*) and the biennial white-flowered species (*Melilotus alba*) are valuable over a wide area, while the annual yellow-flowered species (*Melilotus indica*) is of little economic importance except in the extreme South and Southwest, where it is grown as a winter-cover and green-manure crop. With the exceptions of a few localities, white sweet clover is grown almost entirely. This is due to the fact that it yields more forage and produces larger roots than the other species. The white-flowered species is ordinarily referred to as sweet clover, while the other two species are called yellow sweet clover.

Sweet clover resembles alfalfa when young, but can be distinguished from it by its bitter taste, its smooth shiny leaves, and later, when in bloom, by the long, loose spike-like arrangement of white flowers in contrast to the close purple clusters of alfalfa flowers. One of the most notable features of sweet clover is its root system. During the first season of growth the roots often reach a diameter of one-half inch at the crown of the plant. On account of the fleshy character of the roots, a large quantity of vegetable matter is added to the soil, even when the tops of the plants are removed for hay.

USES OF SWEET CLOVER.

There are few plants which will put waste land or run-down farms into condition for producing crops as quickly as sweet clover. Its value for this purpose is recognized in Alabama and Mississippi, and also in parts of Kentucky and Ohio. On account of the root development of this plant, large quantities of vegetable matter are added to the soil when a field of sweet clover is plowed. The root system alone has been estimated to be about 20 tons of green weight per acre for a good growth of sweet clover. In some parts of the country it has been used in a small way as a green-manure crop, the second year's growth being plowed under. By turning under a crop of sweet clover, or only the stubble, marked gains are obtained in the following crop.

Sweet clover is a very good winter-cover crop in that it prevents the soils from gullying and washing. It also takes up large quantities of available fertilizers which would probably leach out of the soil during the winter. On account of the large tap-roots of sweet-clover plants, potassium and phosphorus may be taken up in the subsoil and deposited, at least in part, in the surface soil when the roots decay.

Since sweet clover is a biennial, like red clover, it is readily adapted to similar rotations. Sweet clover will undoubtedly prove to be a valuable crop as a substitute for red clover in the ordinary farm rotations where red clover will no longer grow. It may be seeded in the spring on grain as red clover is sown. When seeded in this manner some pasturage will be produced that fall in the North and pasturage or a hay crop in the South. The following season it produces two crops in the North and three crops in the South. It may be handled in a manner similar to red clover.

Sweet-clover hay is rapidly coming into favor as a feed for all classes of live stock, especially in places where more desirable types of hay will not grow successfully. Ordinarily some trouble is experienced in getting stock to eat sweet clover at first, on account of its bitter taste; but after they have been accustomed to eating it no trouble is experienced. A high percentage of digestible protein is contained in the hay.

Sweet clover makes excellent pasturage for horses, sheep, cattle, and hogs. Probably the easiest way to create an appetite for this plant is to commence pasturing stock on it very early in the spring of the second year, before other green feed has started. A sufficient number of animals should be kept in a sweet-clover pasture to keep it grazed rather closely. This will prevent the stems from becoming large and woody, and will also induce an abundant growth of young shoots. Stock when pastured upon sweet clover makes gains which compare very favorably with those obtained from either alfalfa or red clover.

There is very little danger of bloating when stock are pastured on sweet clover, but it is safest to avoid turning the stock into a sweet-clover pasture when it is wet with dew or rain, or when stock are unusually hungry. Sweet clover will also thrive well during midsummer drouth and produce much early and late pasturage.

SOIL REQUIREMENTS.

Sweet clover has the ability to thrive on poor clay soils as well as on poor sandy soils, but it will make a better growth on fertile soil. It prefers soils of limestone origin. Clay soils which are acid should be limed before sweet clover is sown. Sweet clover is also very resistant to alkali, and plants may be found in the West growing on soils so alkaline that little else than salt grass is able to survive.

The primary requisite for obtaining a stand of sweet clover is to have a firm, thoroughly compacted seed-bed with just enough loose soil on top to enable the seed to be covered. The lack of a firm seed-bed is probably the chief reason why sweet clover so often fails when seeded under cultivation. However, if it is seeded with spring-sown grain the seed-bed should be rolled after seeding. Better results are usually obtained where sweet clover is seeded alone in the late winter or spring on ground which has been plowed and thoroughly worked the previous fall.

SEEDING.

The time for sowing sweet clover varies considerably in different sections of the United States. In the eastern part, in the latitude of Washington, D. C., a good stand may be obtained by seeding either early in the spring or about August 15. One disadvantage with early fall seeding is that the plants mature and die the following year and only a small growth of roots is obtained. If seeded in spring in a nurse crop sweet clover will develop an extensive root system the first year and produce a small

amount of pasture. For this reason it is recommended that, so far as possible, it be seeded in the late winter or spring. In the southern states, as far north as the Ohio River, the practice is to seed quite early in the spring, during February or the early part of March. In the states further north the date is correspondingly later, until in Wisconsin it is usually seeded in the latter part of April or first of May. When the rainfall is sufficient, a stand can be obtained by seeding in small grain, such as fall wheat or spring-sown crops like oats and barley, but in seeding with grain one runs some risk of having the sweet-clover plants killed out by drouth during the summer. Owing to the rather slow germination of the seed it is usually best to seed at the rate of 15 to 20 pounds of hulled seed and 25 pounds of unhulled seed to the acre.

INOCULATION.

On poor soils, in localities where sweet clover is not common, it is quite important that the soil be inoculated at seeding time to insure good results. Even in localities where sweet clover is plentiful the early growth has been made much more vigorous by thoroughly inoculating the soil. Inoculation can be accomplished by mixing soil from a field where sweet clover, burr clover, yellow trefoil (black medic), or alfalfa grows abundantly, pound for pound, with sweet-clover seed. This mixture should be sown after sunset or on a cloudy day, and immediately harrowed in, since daylight greatly injures the inoculating germs. Inoculation is also accomplished in the South by using unhulled seed. Pure cultures of the inoculating bacteria may be obtained free of charge from the Department.

HARVESTING.

When hay is desired, sweet clover should be cut just before it begins to bloom. At this time the leaves are most abundant, and the stems have not yet become woody. Sweet-clover hay should be tedded while in the swath; and, just before the leaves become dry enough to shatter, it should be raked into windrows. After lying in the windrow for a day it may be put into shocks and cured. When sweet clover is seeded in the spring with a nurse crop, only a small amount of pasture is produced that autumn; but where it is seeded alone in the spring a cutting of hay may be made in the autumn. The following year a hay crop and a seed crop, or two cuttings of hay if seed is not desired, are usually obtained. In the South, where seeded alone, two cuttings may be obtained the first year, and either two cuttings of hay and a seed crop or three cuttings of hay the second year. Where seeded alone in the North there is no danger of the hay becoming woody the first year, and for that reason it does not need to be cut until it has attained its largest growth in the fall.

SEED PRODUCTION.

In harvesting the seed it is important that the plants be cut before the seed is fully matured. One must watch the seed crop carefully, and as soon as the lower racemes or spike-like arrangements of flowers are dry and mature it is best to cut the crop. Even where it is mown and the seed flailed out, probably not more than three-fourths of the racemes should be allowed to become fully mature. Sweet-clover seed can be thrashed most easily by the ordinary thrashing-machine; but if it is to be hulled a regular clover-huller with special rasps is used. In semi-arid and irrigated sections the hulls are so dry that an ordinary grain-thrasher will remove most of them. Since the seed shatters very easily, sweet clover should be cut when it is wet with dew. If the first growth be cut for hay when it is 2½ feet tall, leaving a six-inch stubble, the seed crop will come on much more evenly. Care should be taken to cut the stubble of the preceding hay crops as high as possible, so that there will be sufficient stems remaining to resume growth, as this plant, unlike alfalfa, does not form new crown shoots. Seed yields vary from two to eight bushels to the acre.

ERADICATION.

The failure of the farmers throughout the United States to make use of this valuable legume has largely been on account of the fear that it could not be eradicated from their farms if once started. The biennial nature of the plant makes the problem of eradication very easy. It will not persist when continually mowed so that it cannot produce seed, nor is it troublesome in clean cultivated or intertilled crops.

QUESTIONS ABOUT FLORIDA, DUCKS, CHICKENS, BEES, ETC.

1. Do you think that the raising of Indian Runner ducks in southern Florida is profitable—more particularly for eggs?

2. Were you called upon to decide whether you had better raise Indian Runners or any other breed of poultry that you might select as a source of income, which would it be?

3. In California there is a prejudice against duck eggs, hence the people that deal in eggs alone do not encourage one's raising ducks. Is this so in Florida?

4. What variety of fowls do you advise keeping in Florida—that is, if you wished to make eggs the leading feature of the enterprise?

5. What do you advise as a source of income in connection with Indian Runners or poultry—that is, for Florida, and if one had five to ten acres of land?

6. Do you advise keeping the white Indian Runners in Florida or the colored ones?

7. Does the warm country of southern Florida seem to affect unduly the Indian Runners?

8. Do you know of any section in southern Florida, east or west coast, where you think that one might profitably start an apiary? A friend once visited Sarasota, and was quite taken with the place. He also spoke of some near-by islands.

9. Will you please mention in the order of their importance such plants as are grown in Florida suitable for bees?

10. As a money-maker only, apart from any personal choice as to a place of residence, etc., do you consider California or Florida the best state—that is, suitable for bees?

11. What variety of bees do you consider the very best for Florida?

12. Were one starting the bee industry in Florida, would he do better to buy his apiary stock in that state, in Georgia, or some of the other states north of Florida?

13. A gentleman said to me the other day that he thought there was an overproduction of honey in this country. Is that so?

14. Does extracted alfalfa honey rank lower as a market product than other grades?

15. What about the orange-blossom as honey-producer?

16. About what proportion of our honey is exported?

San Jose, June 15.

1. The Indian Runner ducks are profitable in Florida when eggs are worth 40 or 50 cents a dozen; and as we get them to lay when the hens are laying little or none at all, the ducks do very well, especially if you have an opportunity to let them run in the canal as we do. If you are obliged to keep them confined, unless you use great care and economy their feed will cost more

than the eggs, when eggs are down to 20 cts., as they were last winter.

2, 3. I would select some other breed of poultry than ducks, because of the fact of the prejudice you mention in No. 3; and I think it's about the same in Florida as in California. People won't buy duck eggs, as a rule, unless there is a scarcity of hens' eggs and they are away up in price.

4. For eggs alone I think I would keep the Leghorns; but as the Rhode Island Reds for the past two winters have been laying, at moulting time, when eggs were 50 cts. a dozen, more than the Leghorns, I am not exactly decided.

5. I suppose the most money is made growing celery, lettuce, and other stuff to be shipped north; but this requires considerable capital, and the result is, perhaps, uncertain. As for myself, I have had more profit in growing potatoes, in connection with poultry, than any other garden crop; but I sold my potatoes right in town, of course, only in limited quantities. See back numbers of our journal.

6. My impression is that it makes little difference whether the ducks are white or colored; that is, where they are kept for eggs, and I should say the same in regard to chickens. The warm weather doesn't seem to trouble Indian Runners at all; in fact, they have no diseases so far as I know, and are never troubled with insects or vermin, unless it is the crocodiles where they run at large. See back numbers.

8. Sarasota is but a few miles from Bradentown, and the conditions are practically the same. The trouble with the island, and the greater part of Florida, in fact, is transportation, the distance from postoffice, etc.

9. There are no plants grown for bees in Florida that I know of. Of course, some honey comes from orange bloom, but oranges are grown for fruit and not honey.

10. I suppose more large yields of honey have been made in California than Florida; but it should be kept in mind that Florida has in years past also made some enormous yields; and California has also had quite a few seasons when the honey crop was almost a failure.

11. I believe the Italians are considered the best all-around bees in Florida as well as everywhere else.

12. I think I would buy bees to start with in Florida, so as to save transportation; and a few hives can be bought in almost any locality in the state.

13. An overproduction of good honey is something I never heard of as yet. I think there is no trouble in that direction.

14. Alfalfa honey is generally considered about equal to any, although there are some people who dislike its particular aroma.

15. Orange-blossom honey stands clear up to the top, or at least very near to the top, as to quality; but it's only occasionally that we have a good flow from orange bloom.

16. I am not prepared to answer; but my impression is that very little honey goes out of the United States. In Cuba, before the war, tons and tons of honey were sent to Germany and other foreign countries.

RAINBOW CORN AS A SUBSTITUTE FOR OSTRICH FEATHERS.

Dear Uncle Amos:—At a party that Elizabeth was invited to she wore a hair-band of a rainbow corn-leaf which grew in our garden. I thought you might like to know of a new use for rainbow corn.

Your niece,

Lakewood, O., Aug. 5. DONNA SMITH.

Of course you have all heard of the cost of high living, referring particularly to "our daily bread;" and I think we are going to have something about the "high cost of dressing," especially when we consider the cost of some of the expensive millinery. The rainbow corn leaves would be, of course, but transient; but when the corn is at its best it would not be very much trouble to gather fresh leaves for every special occasion.

THE WRIGHT BROTHERS' FLYING-MACHINE FACTORY AT DAYTON, OHIO.

Ever since the Wright brothers succeeded in making a machine fly, I have given you occasional notes as the years have gone by. Just now I clip the following from the *Ohio Farmer:*

WRIGHT PLANT SOLD.

Orville Wright, aviator and aeroplane inventor, has sold his factory at Dayton to a syndicate of eastern capitalists. He now intends to give all of his time to scientific research along the lines of aviation.

It may be of interest to know that this Dayton factory is now quoted at something over a million dollars. I have been wondering if it were not possible that Orville Wright has sold out because he is averse to furnishing machines for war, as his father has been all his life a minister; and from what I know of the man I can readily imagine that he would be strongly averse to the manufacture of any machine designed for the purpose of killing people.

HEALTH NOTES

INTERNAL BATHING; FLUSHING THE COLON.

Our older readers will remember that toward twenty years ago I was greatly taken up with the "new water cure," as we called it, and I had some tracts published describing it, and, in fact, this whole thing was quite a fad at that time. But I soon discovered, with others, that, while flushing the colon with warm water would give instant relief in some cases, it was a great mistake—yes, a great blunder—to imagine that nature wanted us to hurry things up by a *daily* use of these applications of water or some substitute. Any one who has tried it will soon find his strength giving out, and I have been obliged to give a warning at various times ever since I was led into this piece of folly. Here is something from a young physician that hits the matter just about right.

Mr. Root:—I have gone so far in joining the "Bee Tribe" that I have acquired two swarms of Italians and the A B C, and have subscribed for GLEANINGS; and, strange as it may seem, I know enough to know that I don't know much about the bee part of it yet; but in the Health Notes I found that for which I had been long looking in vain (as people rarely are frank and helpful enough to publish any adverse testimony): viz., practical testimony as to the harm arising from following too far such a fad as the "internal bath."

There are conditions in which its limited use is no doubt beneficial; but if the wise Creator had intended that it should be always necessary or even good he would have provided us with a syringe attachment.

Most of our health fads have a germ of truth in them; but either their promoters hold the dollar so near that it covers all else for them, or they are seeing everything through one knot-hole; and any boy around the ball-park can tell you that you can't do that.

How much better it would be if we would apply a little skepticism, and seek knowledge until we are able to judge intelligently before following any of the "isms" faster or further than our reason can keep up with us, instead of blindly taking the word of some monomaniac or fellow who has something to sell!

How do we know that the contents of the bowels contain matter that is acting as a poison to the system? We don't. But we do know that they contain a lot of digested food ready for assimilation, and which the system needs. Who would be so foolish as to go to the expense and trouble of preparing food and then throw away what is not taken out at the first course?

How do we know that poisons are absorbed from the bowels? We do know that they are not, under any ordinary circumstances, but that there are some things that we need which are to be taken up by organs made to take them up, and to reject the refuse which the bowels will naturally throw off.

When we are ignorant of a matter, even if we know our ignorance, we hesitate to admit it, and find it easier to listen to the fellow who will make a lot of positive statements, and draw conclusions from them regardless of their truth, and be ruled by our imagination or his, than it is to question, sufficient to be guided by our own reason. It is not always safe to admit the truth of a thing and follow it simply because, in our ignorance of the subject, it can be made to look plausible to us.

Chattanooga, Tenn. F. C. FREEMAN.

VICTUALS AND DRINK; WHAT SHALL THEY BE? HOW TAKEN? ETC.

I am a clergyman, and have been taking GLEANINGS for a little more than a year. I am greatly interested in your Health Notes, for the reason that I am trying to win back my health. I notice that at your advanced age you keep in good health by strict observance of health laws, and carefulness in eating.

Would you be able to give an article on diet in which you describe or rather name the foods you eat, the number of meals per day, etc.? At the present time I am handling my own case of superacidity of the stomach; and I know from past experience that I shall get over it.

I fasted from all food about two days; drank plenty of water, and am now taking four quarts of milk daily when at home, drinking 6 ounces every half-hour. When visiting around the parish I take about a quart of milk at a meal. The milk is warmed, and is "chewed." S. CLOWES NOXCON.

Winona, Ont., March 23.

My good friend, I should say you are about on the right track except in the great quantity of milk. Few people could stand as much; and taking it in small doses every half-hour I am sure would not agree with me at all. I greatly prefer eating nothing after three or four o'clock in the afternoon. You do not mention outdoor air and sunshine; and so far as a clear conscience is concerned, a minister of the gospel should, it would seem above all others, have that at all times, together with "the peace of God that passeth all understanding."

NERVOUSNESS—WHAT SHALL BE DONE FOR IT?

If Mr. A. I. Root could help me some I should be thankful. I am troubled with nervousness, and the doctor does not do me much good.

Cotton, Ill. EVAN J. JONES.

My good friend, a little sleep when you are worried and nervous would be the first thing; and I would advise two meals a day, or two meals and a little fruit, say at four or five in the afternoon—nothing between meals until next morning, at breakfast. Your occupation should be outdoors, and you should have exercise enough to feel tired before you take any rest. If there is something that worries you, get rid of it if possible. If you have financial trouble, get rid of it. The loss of a little money or a little property is nothing compared with the loss of health. Strive to have a clear conscience void of offense before God and before your fellow-man.

POULTRY DEPARTMENT

THE INTELLIGENCE OF THE HEN; ALSO SOMETHING ABOUT CHICKEN HAWKS.

The letter below was received some years ago, before the trouble in Mexico. May God grant that a settlement may be near at hand, and that we may hear further from the writer.

At Venedocia we care for 300 chickens, and we very seldom eat one—not because we do not appreciate the taste of their tender flesh as much as the hawks do, but because it is too much like eating the tender bodies of our own babies which we have ofttimes snatched from the outstretched hand of death, and in our bosoms hidden from his grasp. We sell our cockerels, and let others slaughter and eat them. But on those rare occasions when we nerve ourselves to kill one at home we see to it that there be no race-witnesses to the regretful deed, while the victim himself knows not his impending fate, for a sack drawn over his head mercifully closes his eyes alike to the light of his departing day and to the uplifted ax that descends to destroy a bright intelligence and a pleasing personality.

Do we incline to believe a chicken has a soul? We do not know. Let our practice indicating a recognition of a visible degree of intelligence, of race consciousness, and ability to adapt itself to a changed environment, be our answer.

As to the intelligence of the hen, our observation shows it to be marvelous within the limit of its environment. We have seen chickens struggling sturdily with problems, trying in many ways to solve them. Certain emergencies a hen meets promptly and bravely. All is accounted for by "instinct," a word expressing only the ignorance of our forbears. Call it rather the accumulated tendency of successive generations to answer a question in its one and only answerable way. We have no hesitancy in asserting that the hen has intelligence of a rational character, and that it can arrive at correct conclusions within the limits of its ability to take correct observations. The hen (and her mate) has wonderful eyes, with remarkable accommodation—eyes capable of detecting the arch enemy, the hawk, when a mere speck in the sky, and equally well to recognize and pick up mere specks of food on the ground. I could tell you many an incident illustrative of the existence of indubitable intelligence in the hen—not the kind that would make her out a mere reflex machine or an automaton.

Once I bought a hen from a Mexican señora—evidently old (the hen), and sold because her days of usefulness were believed to be over. She proved to be an inveterate mother, and we soon named her "La gallina loco" (the Crazy Hen) because of her belligerent nature. I wish I knew and could portray the life of that hen during the years before she passed to my care. I know they were full of tragedies; that hawks and coyotes had embittered her life and accentuated the distrust of innumerable jungle ancestors. I could gain her confidence up to the point of picking up one of her family. She drew the line at that, and would attack with all the fury and ferocity of the mother robbed of her young, to the point of insanity. Once I gave her the family of a comrade mother, feeling inexpressibly mean when I did it, and she raised twenty-six. So you see that the idea that a hen is past her usefulness at two years of age will not pan out. *We* say that a hen of indefinite age that has learned to be a good mother is worth several times over more than the pullet which takes her place. "Don't kill the laying hen" is good advice; but "Don't kill the expert mother" is better.

The last family of the Crazy Hen consisted of eighteen. In our *prado*, or green, there is a mesquite bush around which I constructed an open circle of cordwood. This solitary refuge was immediately recognized and taken possession of by the Crazy Hen, and she and her family wisely kept within scooting distance of it. Nothing skyward escaped that mother hen's vigilant eye, old as it was. But the hawks had a way of sneaking down under cover of the seventy-foot cyanide tower, coming in sight only when on the downward fatal swoop.

Once a large hawk thus appeared over the family of eighteen. The crazy hen gave the signal to rush to cover, at the same time herself rushing furiously in line with the hawk to meet it as it neared the ground. The chicks were racing for and reaching the refuge; but one little belated fellow was seized just before the mother reached it with so furious an onslaught on the marauder that its flight was broken and it was obliged to drop the chick and make a run to get into the air again. After that the hawk kept circling at a great height for some minutes before he made off, the hen meantime watching his movements and signaling the chicks to lie low. We saw it all clearly—the hen maintaining a vigilant watch between where we stood and the refuge. At last, when the hawk was far distant, scarcely discernible, occurred the prettiest act of the entire drama, which only the intelligence and experience of the mother hen prevented being a tragedy. The hen gave a different signal, and immediately her family began streaming one by one out of the refuge, running like little white heads in a bee-line for their mother.* We counted them as they came out—seventeen; then there was a pause, and we thought the hawk had held on to the eighteenth and got away with it. We had all yelled involutarily at the hawk when it first appeared. We had no gun, but we almost shouted when, a moment later, the wounded chick emerged and tried to run, but could not, though it bravely struggled at a walk to reach its mother. I went to meet it and found that one talon had gone through a wing, piercing the body; while another had punctured the crop. Notwithstanding its injuries, the wounded chick, rescued and afterward cared for

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* This matter of the "signal" that the hen makes to call her chickens to run under cover, and another signal that they can come out as soon as the danger is past, is something wonderful. Human beings have to be taught to talk; but the baby chicks, like the honeybee, are born with an education—an education that is given by no teacher, but by the great God above. Wild fowls—the partridge, for instance—have the same wonderful vocabulary when danger threatens. This whole matter calls to mind vividly a fragment of an old letter that has just turned up. It was something I wrote to Mrs. Root when I was down on the island near Osprey. It is dated Jan. 7, 1907.

Dear Sue:—I ought to grow "fat," I have been laughing so hard at my pet chicks. As they have no mother, they not only chase after me, but they talk to me almost incessantly; and oh such pretty little baby talk it is! I am learning their language, and they are learning mine; and I am sure the loving Father is sending messages to me—messages of his great love to "even me," through these tiny little voices. When their feet get cold they come to me to "cuddle them up," and then I get, oh such pretty little contented and plaintive voices of thanks! Two have died: but I think through no fault of mine unless it was because I didn't understand the necessity of keeping those tiny little feet real warm. Of course I have lots more, but I am almost ashamed to tell you how hard it was to give up those two.

by its brave mother, got well, and was soon indistinguishable in the rapidly growing family.

After this, and, indeed, long before, we were ashamed for having named her so disrespectfully; and we said that, if she would permit it, we would tie a white ribbon to her wing and call her our "*W. C. T. U.*" fighting mother—worthy exemplar or prototype of those saints with souls who are rapidly "inheriting the earth" after 45 years of faithful endeavor.

Tell me, friend Root, was the defense and attack of our ill-named Crazy Hen "the reflex action of an automatic machine" or was it not rather an exhibition of what in man is called presence of mind, the prompt action of faculties inherited, sharpened, and developed by personal experience? That valiant mother had encountered hawks before—doubtless often fruitlessly; but, as in this case, also with results conservative of the race.

Is intelligence an attribute, a function of soul? Can there be soul without intelligence, without reason, without morality? What and *where* are the lines of definition?

"Morality in chickens! How absurd!" I hear some one say. I could, nevertheless, write an interesting chapter on the family relation of the poultry-yard. Immorality of poultry is the product of conditions created by man. The hen is by nature chaste and continent, seeking and giving her affections to one honored spouse only. It is a scandalous libel on the hen to call her an immoral (or unmoral) automaton. She is neither. That chapter in the psychology of the hen is one of the most pleasing, but it cannot be written now.

Force has no place in the training of young animals of any species. Mature animals with all their inherited and environic tendencies fully developed are not easy to subdue to the will of man. Force is effective only as it demonstrates man to be more powerful and resourceful, thus inspiring *fear*. But fear is a very unsafe basis for any relationship between man and the lower animals, since it arouses and accentuates the natural cunning of the animal, placing it constantly on the watch to take its trainer at a disadvantage. Such animals are not tamed at all. Another is a state of war instead of peace and good will between man and his victims.

Every animal, when it meets man, is an interrogation-point—the question scintillating its brain being, "Is he friend or foe?" There is scarcely more than a moment to reach a conclusion, and almost invariably the animal gives itself the benefit of the doubt, and flees or prepares to fight. He who would enjoy the companionship of the lower animals, whether bird or beast, must learn how to get a different answer to the opening question. Many animals are eager enough to establish friendly relations with man; but the latter is too unintelligent to understand their advances.

GEO. W. DITHRIDGE.

Vencedora, Chih., Mexico.

I wish to call particular attention to the two last paragraphs:

My experience is that domestic animals, especially chickens, after they find that you are really a friend to them, instead of an enemy, greatly enjoy friendly relations; and, as has often been said, the hen that lays the eggs is the happy hen; and when the fowls begin to understand that their owner *is a friend and protector*, they soon begin to enjoy companionship, and are delighted to see and meet their protector. I wish to emphasize, also, the point our friend makes, that, when it is necessary to kill a fowl, do not let any of the rest of the flock witness what is going on. Running down a fowl, when one is all at once wanted for dinner, is bad and demoralizing all around. Take them quietly off the roost, if possible.

May God forgive *me* for having become vexed with sitting hens or hens with broods of chickens in times past; and may he help me to remember the good points presented in the letter above, when I am tempted again to become vexed with the chickens I love, down in my Florida home.

HUMBUGS AND SWINDLES

$239,000,000 GONE TO SWINDLERS; THE "ELECTRO-CHEMICAL" FINGER-RING.

Our older readers will recall how we fought the "iron finger-ring" in years past in connection with "electropoise." See the following from the *Ohio Farmer* of Nov. 6:

During the past four years over 239 million dollars have been filched from the American public fraudulently. That is a big statement, but it represents only a part of the money that has been taken dishonestly during that period. It is merely the sum that federal officials have reported to have been so lifted. It has often been said that the American public is fraud-loving; it likes to be humbugged. But no matter how true that statement may have been at one stage of our history (and of the circus business) it is becoming more and more out of fashion with the passing years. The postoffice department has been largely instrumental in causing the decrease of fraud. In its effort to reduce this form of piracy the department has issued 56 fraud orders during the past year. These orders deny the use of the mails to the person or firm named. As a result of this policy of the department the number of fraudulent schemes has been greatly reduced, but still the aggregate is tremendous. The solicitor of the postoffice department states that one fraudulent concern had receipts of over $350,000 last year. A certain "anti-fat" concern spent over $50,000 in a single month in advertising, according to the same authority. Last year over 40,000 complaints and inquiries relative to frauds were received by the department and over 4000 cases were actually investigated. One of the most profitable fields seems to be that of working on the imagination and credulity of people who are in ill health. Inspectors report that one progressive Ohio manufacturer received $46,500 from the sale of a metal "electro-chemical" finger-ring, which was sold for $2 to some and $4 to others. It was explained that inasmuch as certain diseases are caused by acid in the blood, they would be cured by wearing this ring, because the acid and the ring would create an electro-chemical action, causing the removal of the excess of acid! The diseases which the ring was intended to cure ranged from Bright's disease, St. Vitus dance, epileptic fits and spasms to adenoids, gout, and cancer. It would surely seem that there was considerable acid in the disposition of a man who would make such claims, the cure for which would rest in an iron ring about the ankle from which led a strong chain to a heavy iron ball. Beware of paying for things which are not understood. Beware of charms, wonderful cures, and investments said to make tremendous returns. The people behind such schemes are not in business for their health—at least not for the health of the investor.

Index to Gleanings in Bee Culture

Volume XLIII

In using this index the reader should not fail to note that it is divided into five departments, namely, General, Editorial, A. I. Root's writings, Contributors, and Illustrations. The index of General includes everything except Editorials, Illustrations, and A. I. Root's writings.

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ON THE BOOKSHELF

Wealth from the Soil

When farm enthusiasts talk about the returns in farming for the educated man, they sometimes forget the fact that the profits are only for the man with an education related to the soil. Attending an agricultural college is not the only way in which the necessary information is to be obtained, however.

"Wealth from the Soil" (Forbes & Co., Chicago, $1.00) is one means. This, and other books of its type, are making farming an exact science, more interesting and far less uncertain than it used to be.

The author, C. C. Bowsfield, shows the beginner how to select land, where to locate, what to pay, and how to equip and organize for money-making. With such information the book will save amateurs from serious mistakes.

His chapter on beekeeping, while necessarily elementary, is orthodox, and, like the other portions of the book, forms a basis upon which to build later experience and further reading.

George Washington, Farmer.

When a man achieves great distinction in one line of activity his brilliancy in others is often forgotten by posterity. John Hay, for example, had he not been Secretary of State, would have been remembered as a poet of merit. The career of George Washington as general of the continental armies and first president of the United States has so turned the attention of historians to these more striking accomplishments that his work as a farmer has been neglected.

Now comes an author, Paul Leland Haworth, who by patient research and personal visits to the scene of Washington's labors has uncovered a great deal of interesting information about the home and agricultural life of this, one of the greatest of American farmers. He shows that George Washington was a progressive agriculturist as well as the wealthiest American citizen of the eighteenth century.

Washington cultivated alfalfa on his farm in 1760. He was the first American to raise mules. He was one of the first to conserve the soil. On his estate at Mt. Vernon he performed hundreds of agricultural experiments. He made farming machinery with his own hands. He was a pioneer in improving breeds of stock. This volume is well illustrated with photographs, facsimiles of documents and a map of Mt. Vernon drawn by Washington himself. The book is handsomely bound, and makes a worthy addition to any agricultural library as well as any historical. In fact, it is one of the few books which are necessary for the man who would know the history of agriculture.

"George Washington, Farmer," Paul Leland Haworth, 336 pages. The Bobbs-Merril Co., Indianapolis, $1.50 net.

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